

PS-X9

AEP Model
E Model



STEREO TURN TABLE SYSTEM

SPECIFICATIONS

GENERAL

Power Requirements: 110, 220V ac, 50/60 Hz

Power Consumption: 50W

Dimensions: Approx. 540 (w) x 220 (h) x 450 (d) mm
21 1/4 (w) x 8 5/8 (h) x 17 3/4 (d) inches
Including projecting parts and controls

Weight: Approx. 35 kg, 77 lb 3 oz (net)
Approx. 39 kg, 86 lb (with shipping carton)

TURNTABLE

Platter: 38 cm (15 inches), diecasting aluminum alloy

Motor: Linear BSL (brushless and slotless) dc servo motor

Drive System: Direct drive, crystal lock control system

Speeds: 33 1/3, 45 rpm

Speed Control Range: $\pm 6\%$ (crystal lock OFF)

Starting Characteristics:

Comes to nominal speed
Within 1/8 revolution (33 1/3 rpm)
Within 1/5 revolution (45 rpm)

Wow and Flutter:

$\pm 0.03\%$ (DIN)
0.02% (WRMS)

S/N Ratio:

75 dB (DIN-B)
Within 0.0001% (crystal lock ON)

Initial Drift:

0% up to 1,100 g tracking force
Within 0.002% (crystal lock ON)

Load Characteristics:

Speed Deviation:
Automatic System:

Arm return reject

TONEARM

Type: Statically balanced, universal

264 mm (10 3/8 inches)

356 mm (14 inches)

14 mm (1/2 inches)

$+1^\circ 45'$, $-1^\circ 18'$

Tracking Error:

0-3 g

Tracking Force Adjustment Range:

10.5-18.5 g (with the small counterweight)
18-33 g (with the large counterweight)

Cartridge Weight Range:

(including shell)

— Continued on page 2 —

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND MARK **▲** ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

SONY
SERVICE MANUAL

H-20

CARTRIDGE XL-55 PRO

Type: Moving-coil
 Output Voltage: 0.2 mV (1 kHz, 5 cm/sec, 45°)
 Frequency Response: 10–50,000 Hz
 Channel Separation: More than 30 dB (1 kHz)
 Channel Balance: Less than 1.0 dB (1 kHz)
 DC Resistance: 40Ω
 Impedance: 40Ω (1 kHz)
 Load Impedance: More than 40Ω
 Compliance: 15×10^{-6} cm/dyne
 Tracking Force: 1.5–2.5 g (recommended value 2.0 g)
 Type of Stylus: Elliptical (0.3 x 0.8 mil)
 Nude diamond
 Weight: 22 g (including the shell)

AUDIO SECTION

System: Head amplifier
 first stage LEC transistor differential amplifier
 Equalizer amplifier
 first stage direct-coupled dual-FET differential amplifier, NF type
 final stage SEPP

Outputs: PHONO
 LINE OUT
 voltage 150 mV (max. 14 V)
 impedance 600Ω

HEAD AMPLIFIER + EQUALIZER AMPLIFIER

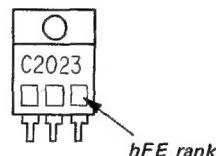
S/N Ratio: 80 dB (A weighting network, 0.2 mV)
 Harmonic Distortion: Less than 0.005% at 1 V output (20–20,000 Hz)
 Voltage Gain: 63 dB (1 kHz)
 Input Impedance: 100Ω
 Maximum Input Capability: 10 mV

EQUALIZER AMPLIFIER

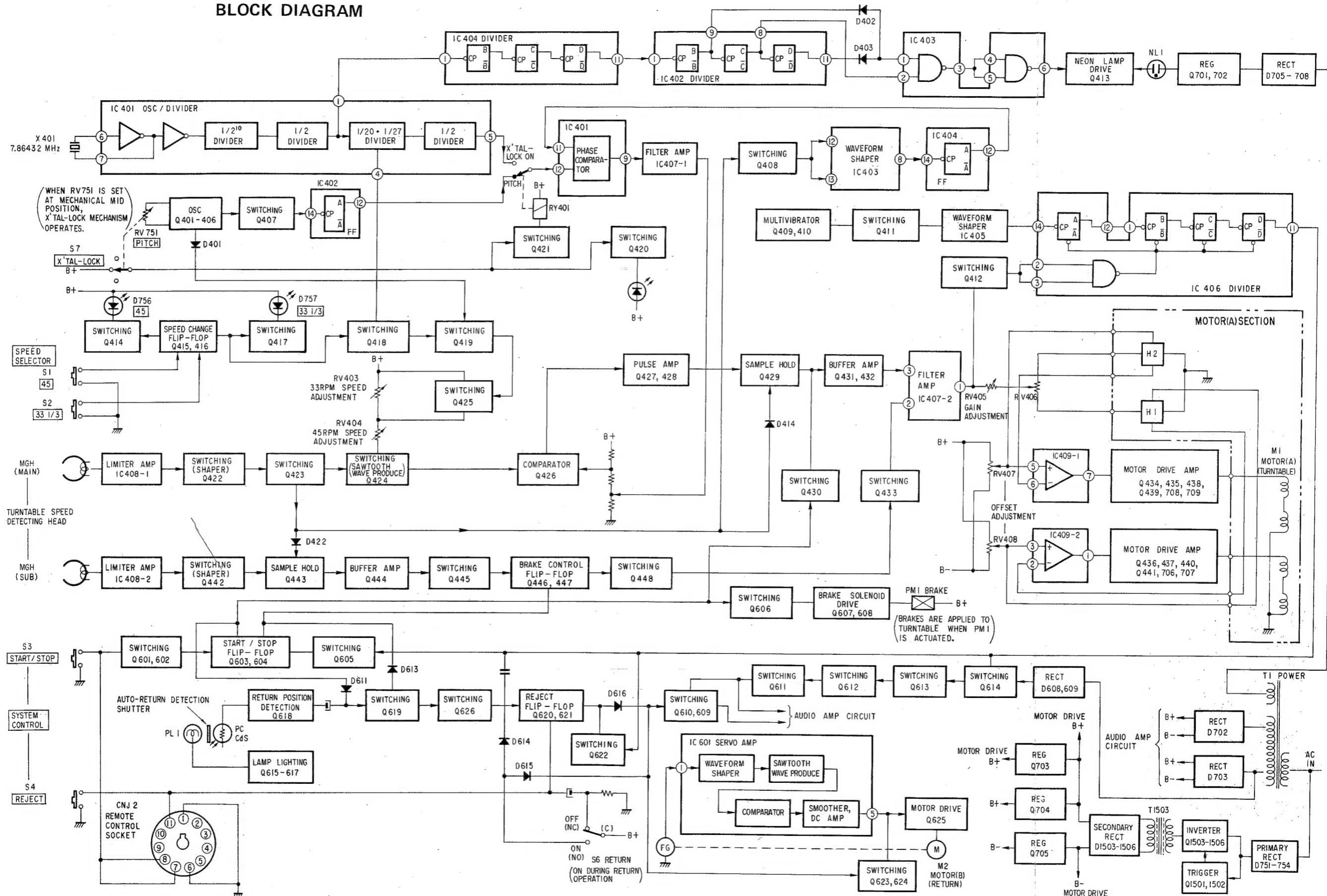
S/N Ratio: 87 dB (A weighting network, 2.5 mV)
 Harmonic Distortion: Less than 0.005% at 1 V output (20–20,000 Hz)
 RIAA Curve Deviation: 20–20,000 Hz ± 0.2 dB
 Voltage Gain: 36 dB (1 kHz)
 Input Impedance: Load resistance 25 kΩ, 50 kΩ, 100 kΩ
 (selectable) Load capacitance 100 pF, 200 pF, 400 pF
 Maximum Input Capability: 240 mV (1 kHz)

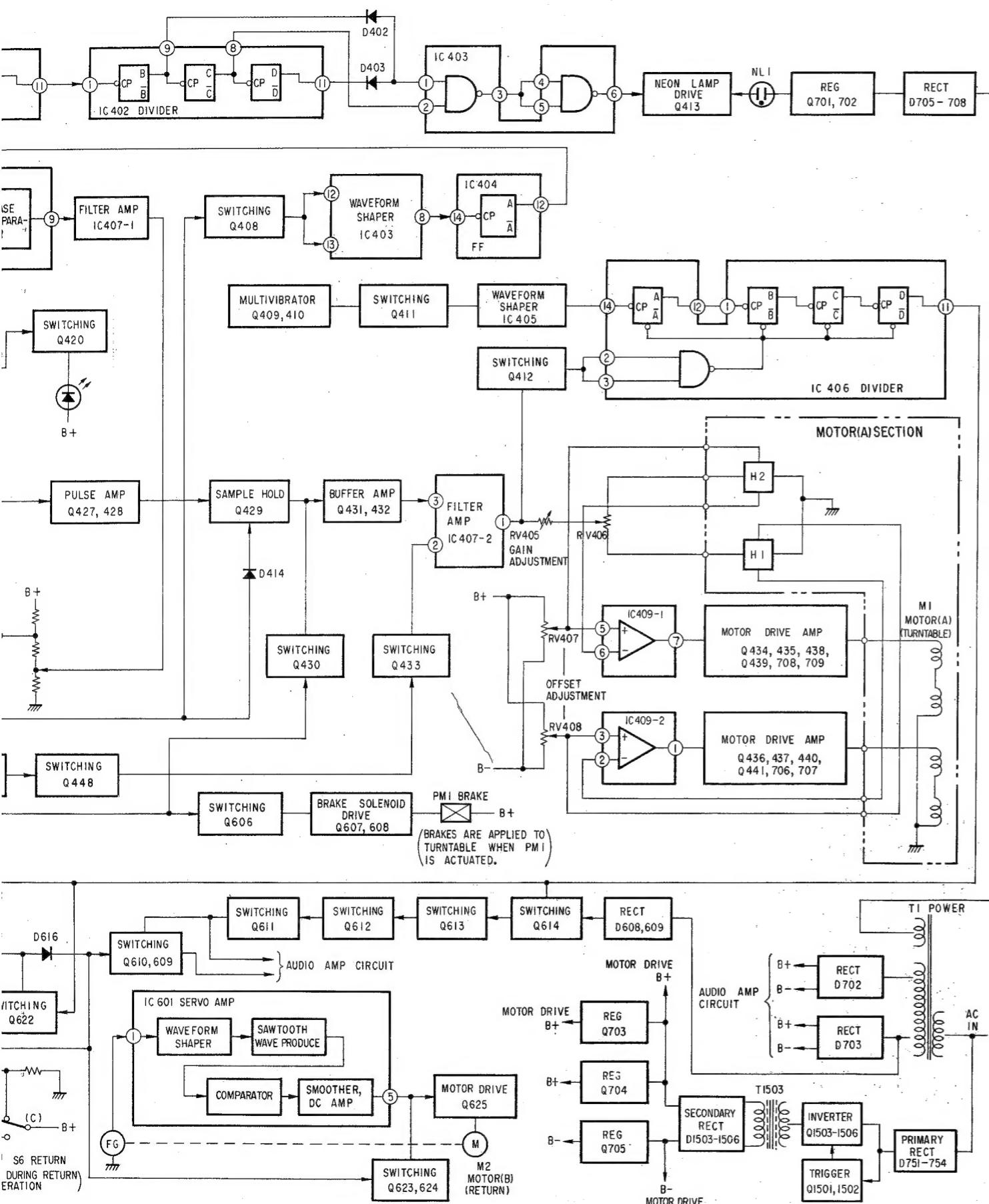
SERVICING NOTE**INVERTER CIRCUIT TRANSISTOR REPLACEMENT (Q1503–1506)****CAUTION**

When replacing Q1503–1506 in the pulse power-supply circuit, use those which have the same hFE rank.



SECTION 1
BLOCK DIAGRAM



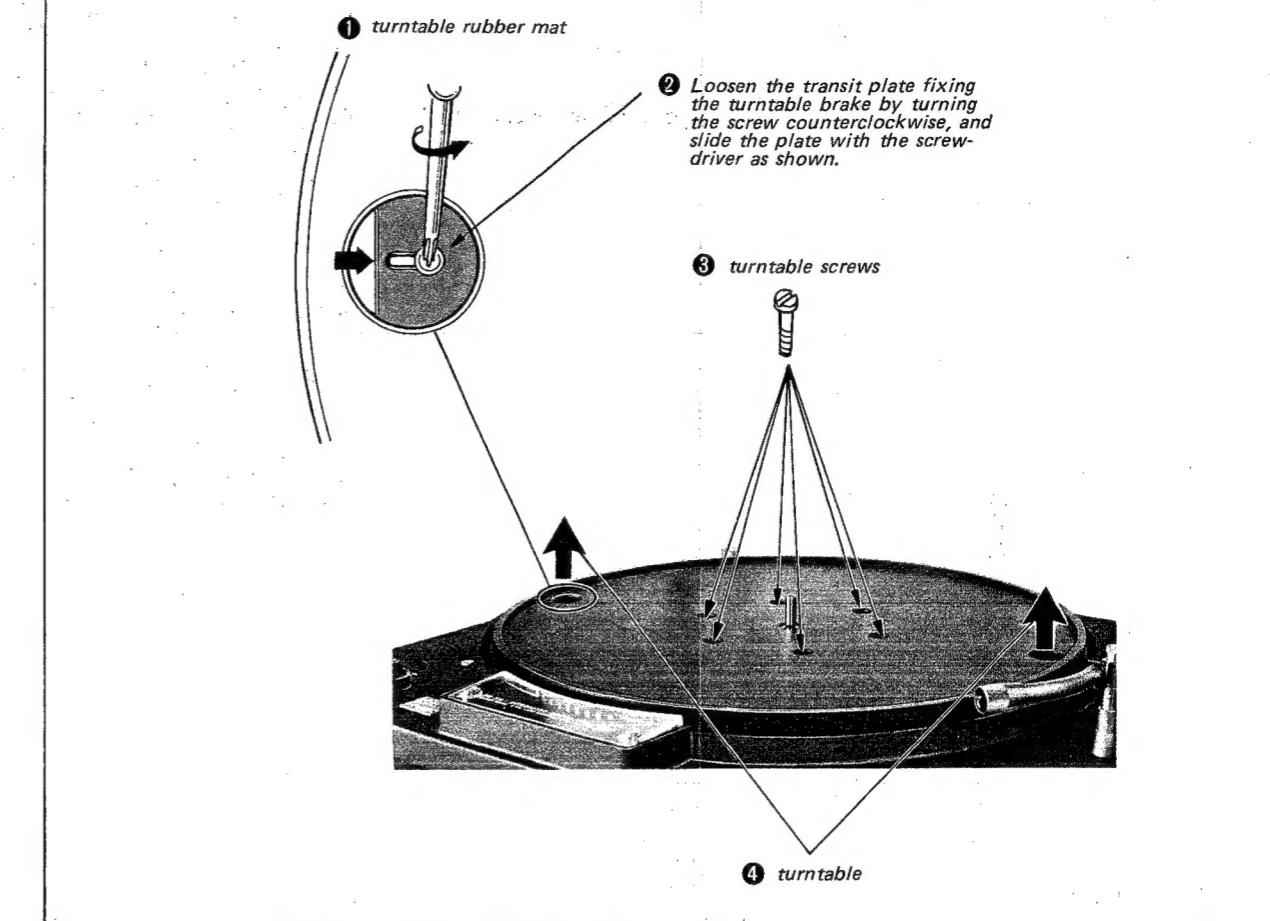


SECTION 2

DISASSEMBLY AND INSTALLATION

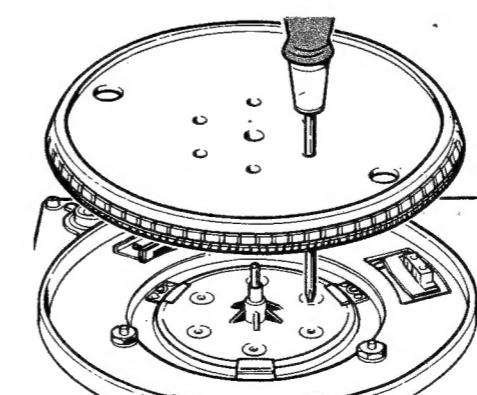
Note: Follow the disassembly procedure in the numerical order given.

TURNTABLE REMOVAL



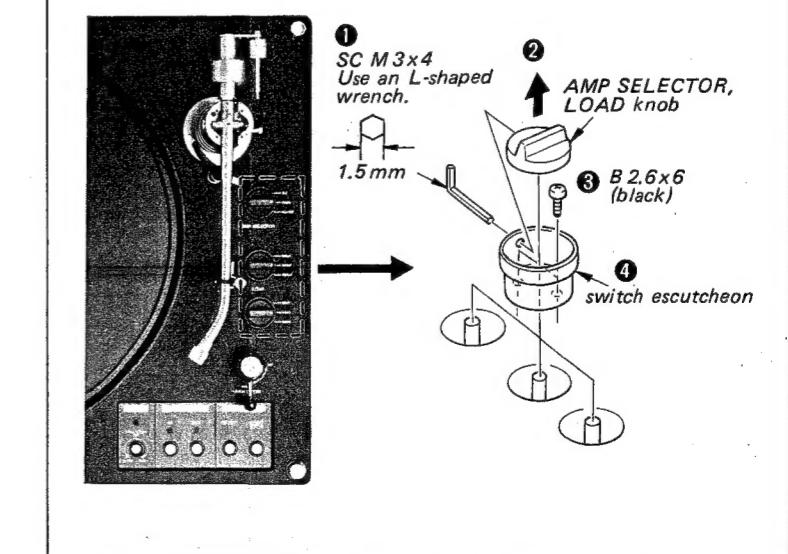
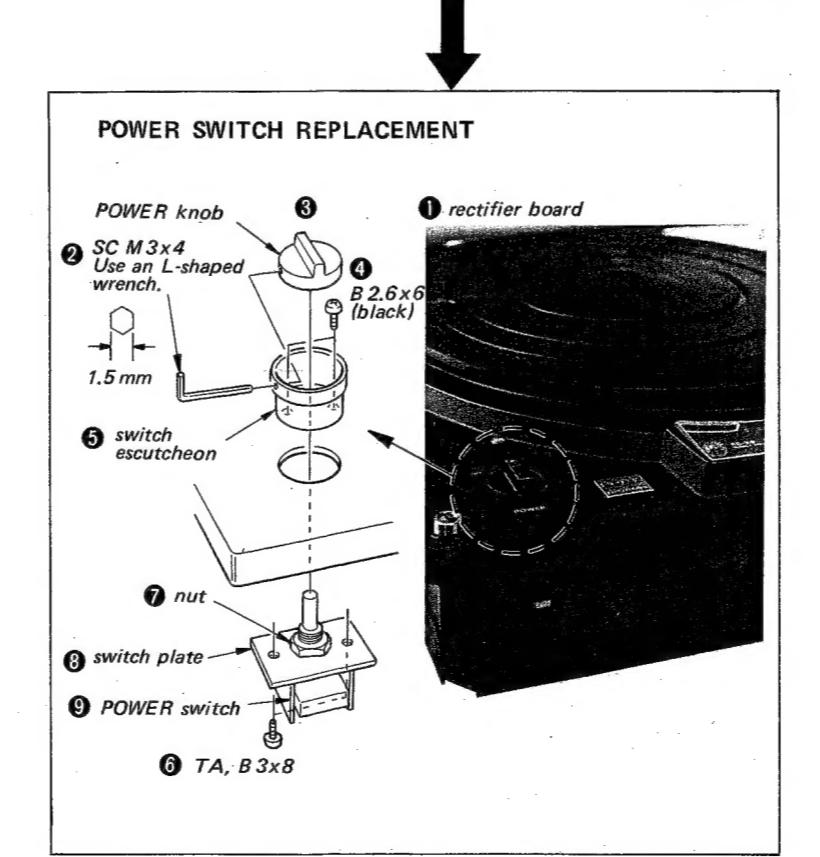
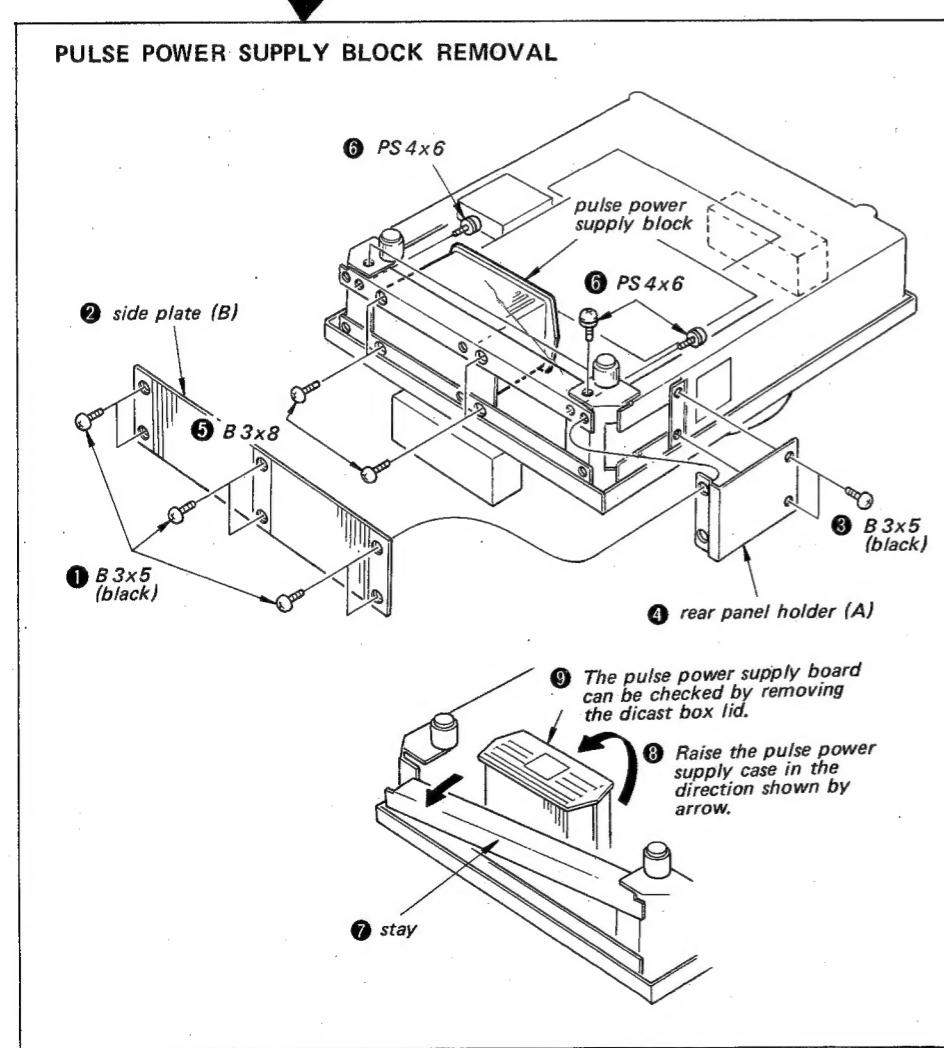
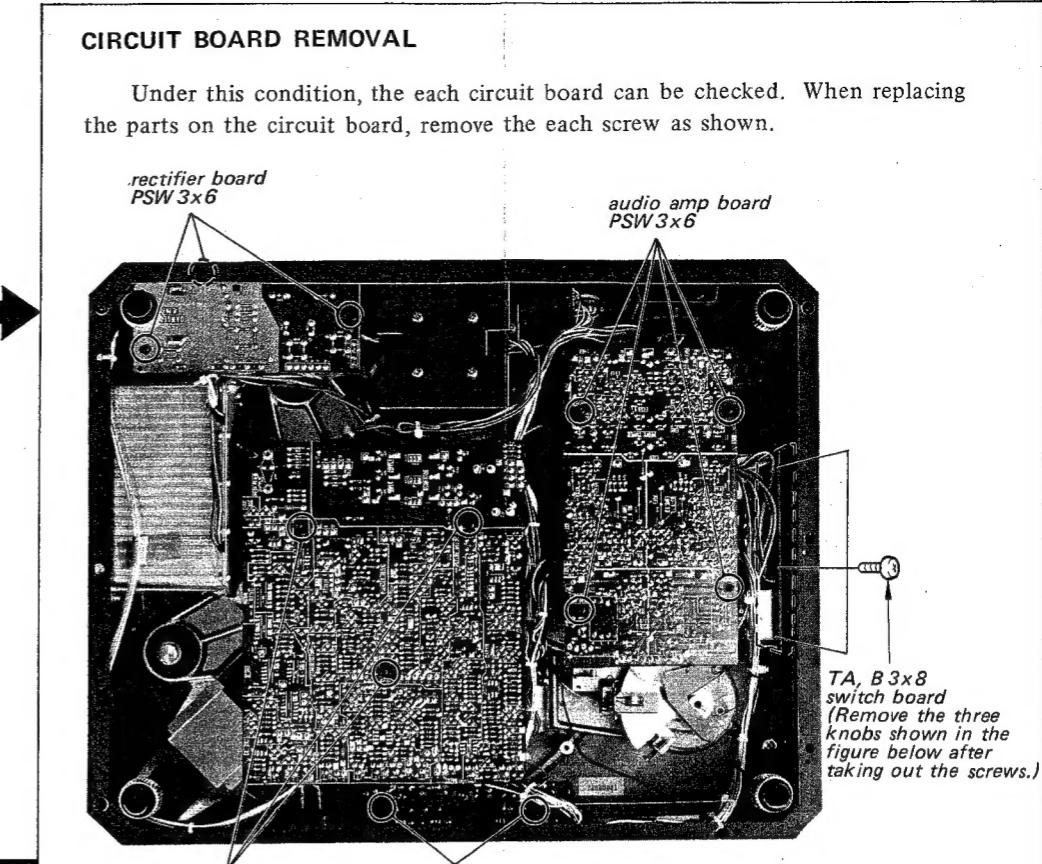
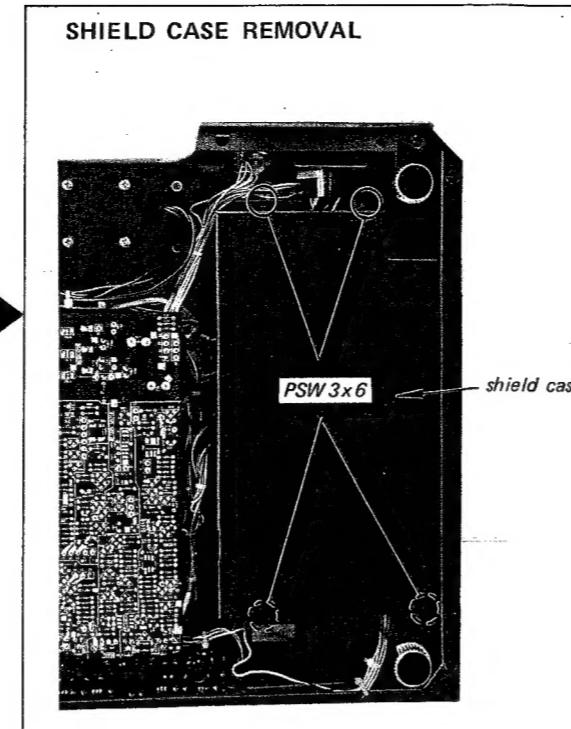
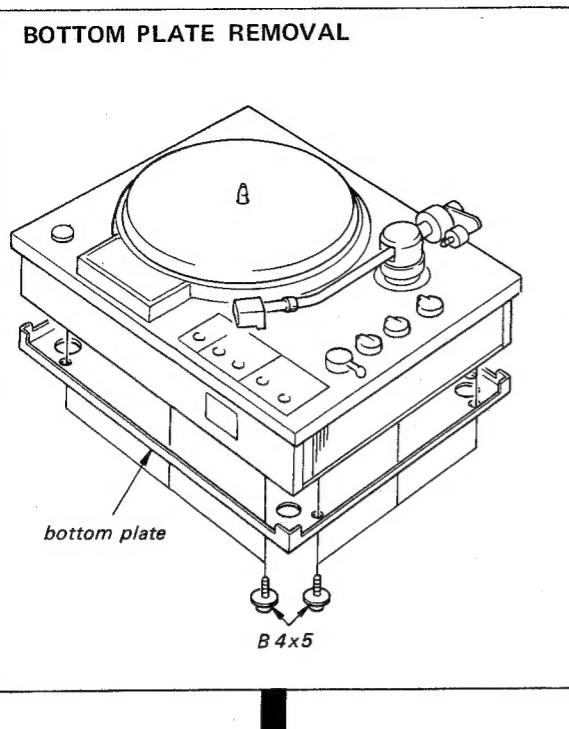
NOTE ON THE TURNTABLE ASSEMBLY

1 Place the turntable so as to match a screw hole of the motor board with one on the turntable as shown.



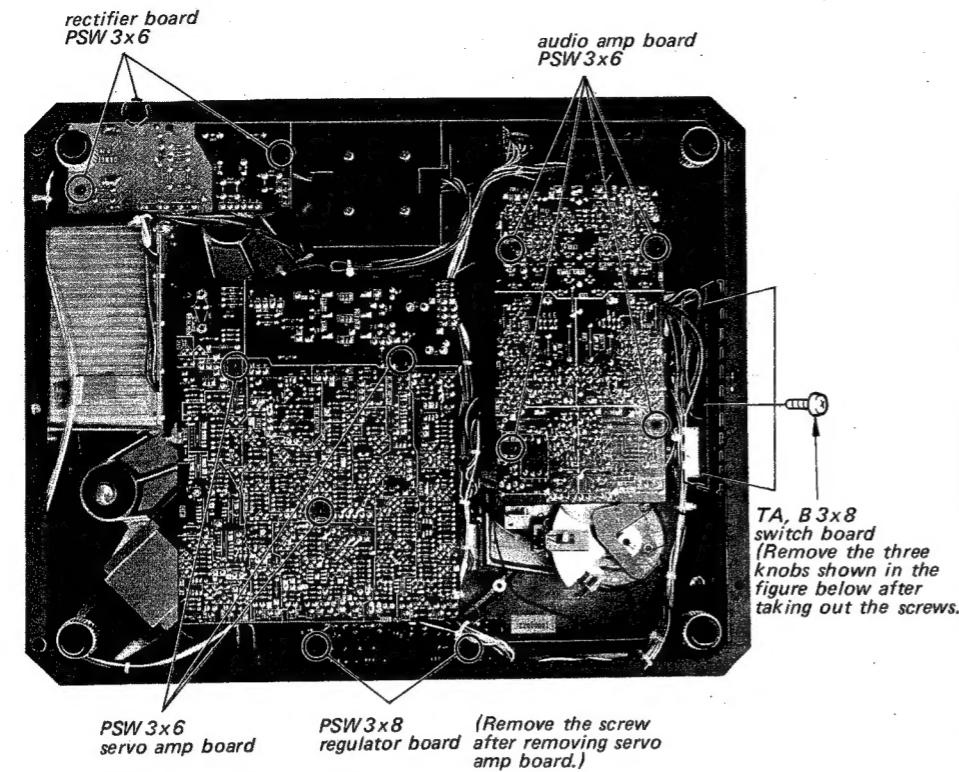
2 Loosen the transit plate fixing the turntable brake by turning the screw counterclockwise. Slide the plate with the screwdriver as shown and then fasten the screw again.





CIRCUIT BOARD REMOVAL

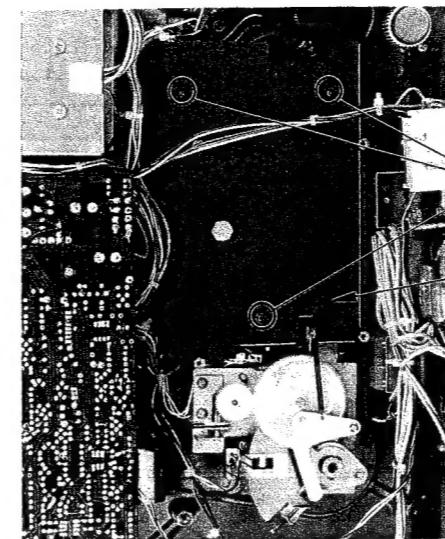
Under this condition, the each circuit board can be checked. When replacing the parts on the circuit board, remove the each screw as shown.



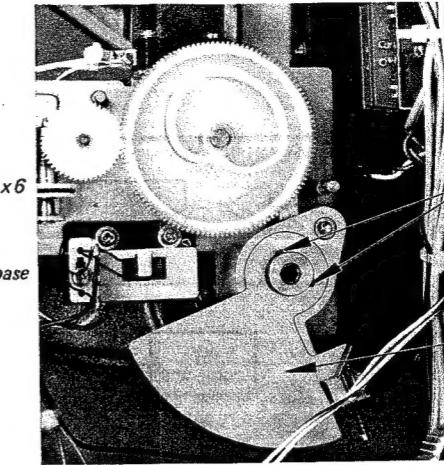
- shield case

TONEARM REMOVAL

① audio amp board



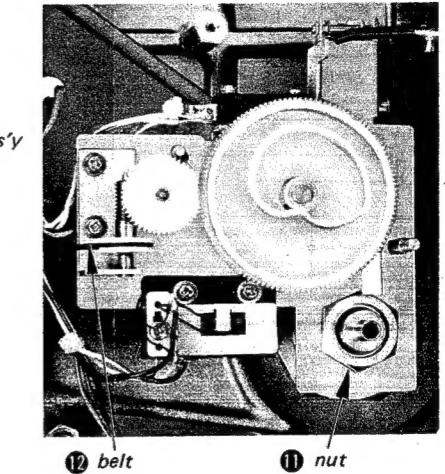
② PSW 3x6



④ Move the tonearm toward lead-out groove of record to the full.

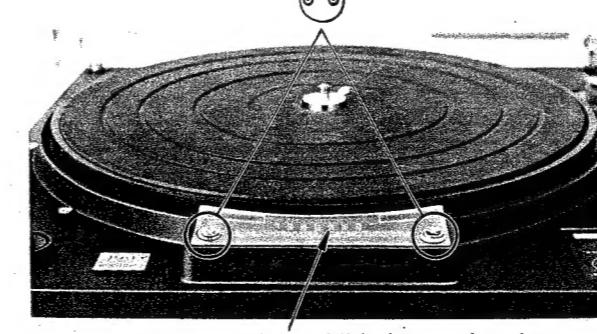
⑤ SC M3x4
Use an L-shaped wrench.
1.5 mm

⑥ shutter ass'y



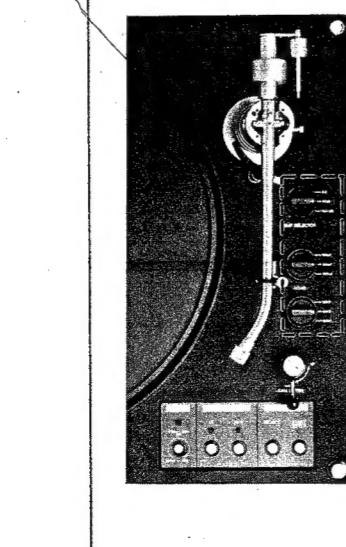
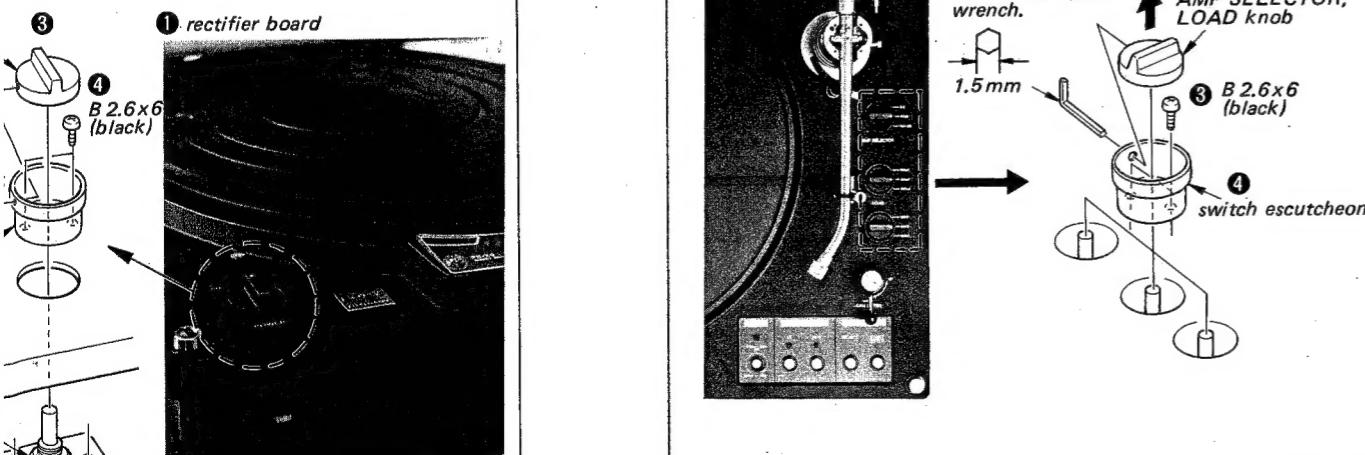
STROBOSCOPE NEON LAMP REPLACEMENT

4 mm screw
(Use a pair of tweezers.)



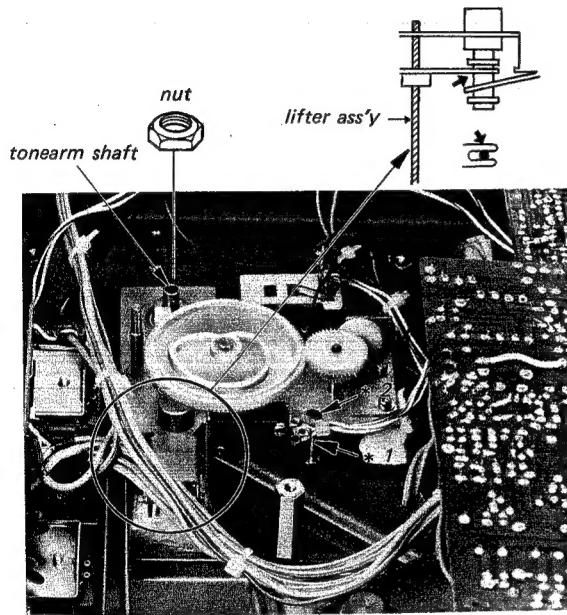
The tonearm can be removed by performing step ⑯.

H REPLACEMENT

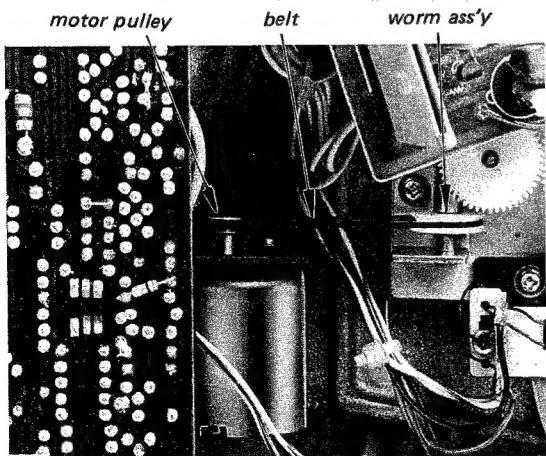


TONEARM INSTALLATION

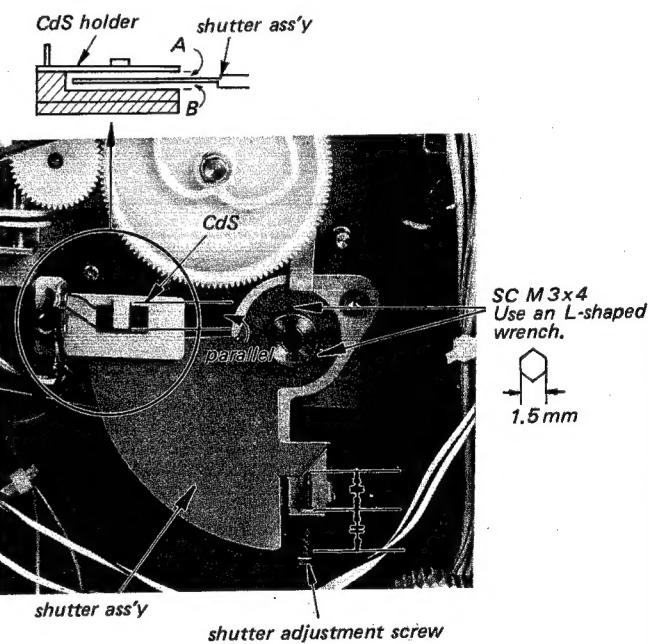
1. Install the lifter ass'y as shown.
2. Insert the shaft (*1) into the hole (*2).
3. Install the nut to the tonearm shaft.



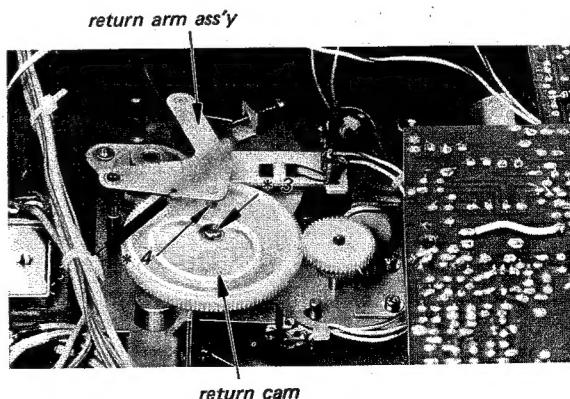
4. Install the belt.
5. Make sure that the motor pulley is even with the worm ass'y.



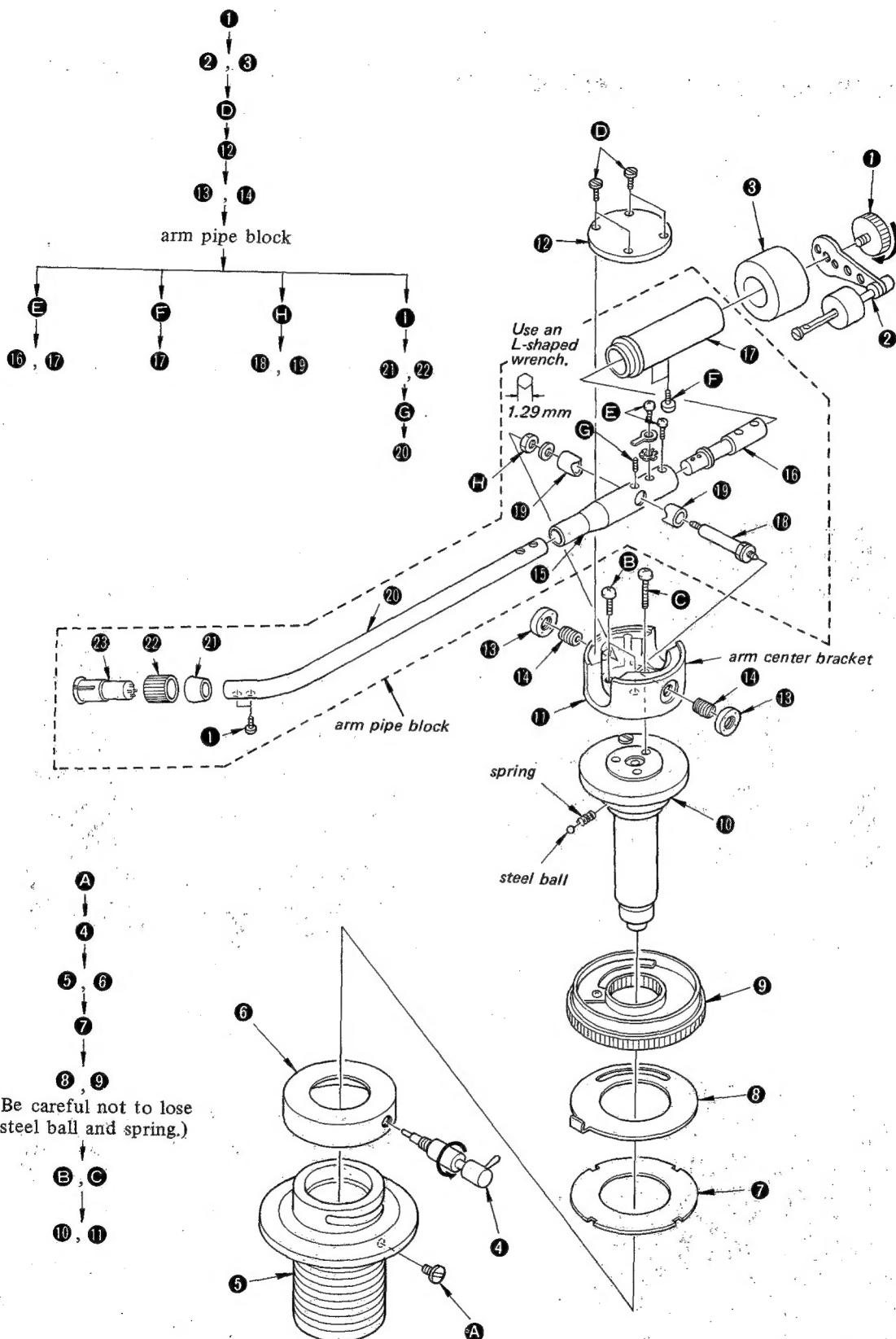
6. Adjust the tonearm so that clearance A is equal to B in the figure below.
7. Turn the shutter adjustment screw clockwise by half a turn.
8. When moving the tonearm toward the lead-out groove of record to the full, turn the screw so that CdS is parallel with shutter ass'y.
9. Temporarily, set the shutter ass'y with a screw (SC M 3x4).
10. Make the automatic-return adjustment on page 15.



11. Install the return arm ass'y. Make sure that the shaft (*4) is inserted into the bearing (*3).



TONEARM BLOCK DISASSEMBLY



TONEARM BLOCK ASSEMBLY

1. Thread the lead wires into the arm pipe. (Refer to Fig. 1.)

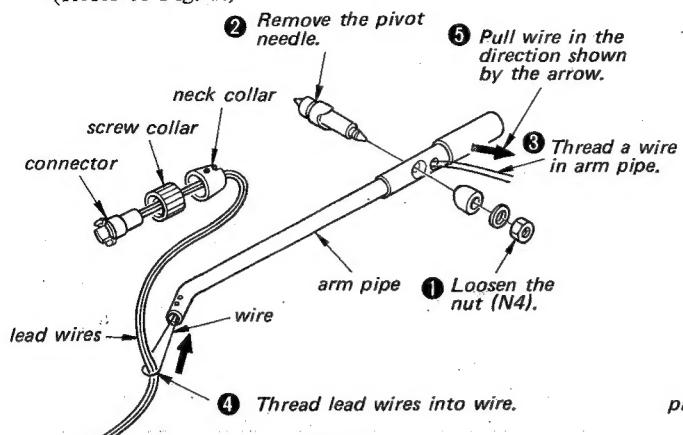


Fig. 1

2. Install the neck-cylinder connector, screw collar and neck collar to the arm pipe. (Refer to Fig. 2.)

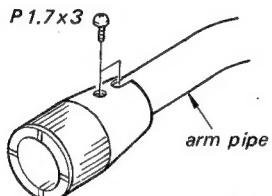


Fig. 2

3. Thread the lead wires into the rotation shaft ass'y. (Refer to Fig. 3.)

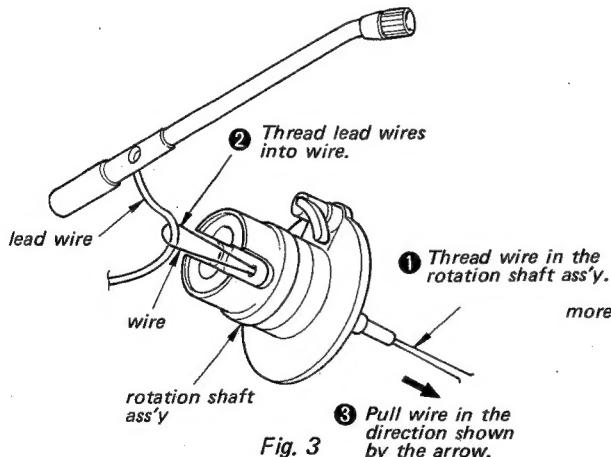


Fig. 3

4. Install the pivot needle.

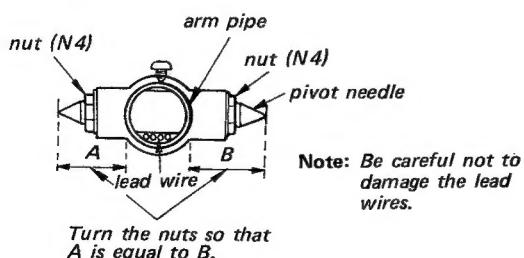


Fig. 4

5. Install the arm pipe to the rotation shaft ass'y. 1) Loosen the pivot bearings and lock nuts. 2) Install the pivot needle as shown in Fig. 5. Temporarily, secure the two bearings for A = B as shown in Fig. 6. Do not tighten the two bearings strongly.

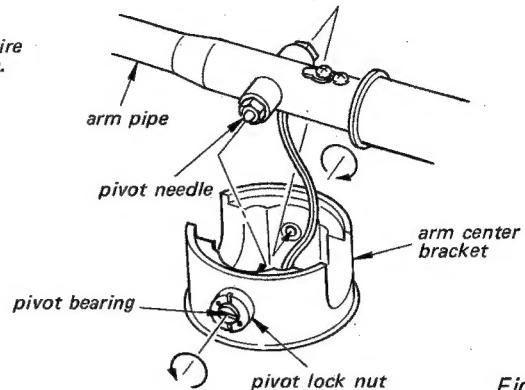


Fig. 5

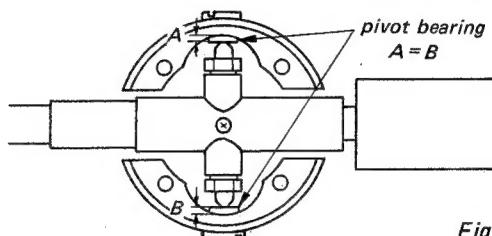


Fig. 6

3) Install the tonearm, and make the balance adjustment with the two bearings. (Refer to Fig. 7 and Fig. 8.)

- When the 20 mg weight is placed on the top of the shell (just above a stylus), the tonearm sinks more than 3 mm (measured at the stylus tip).
- When the weight is removed, the tonearm returns horizontally.

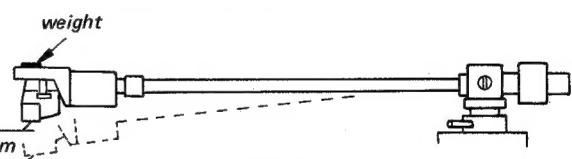


Fig. 7

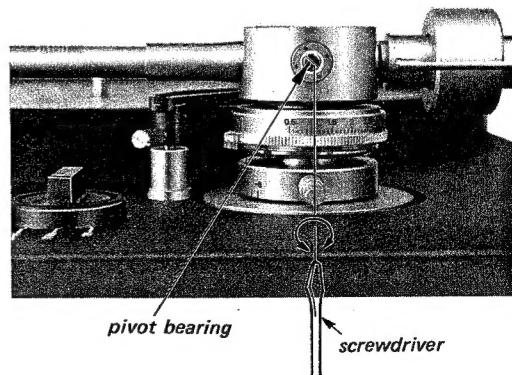


Fig. 8

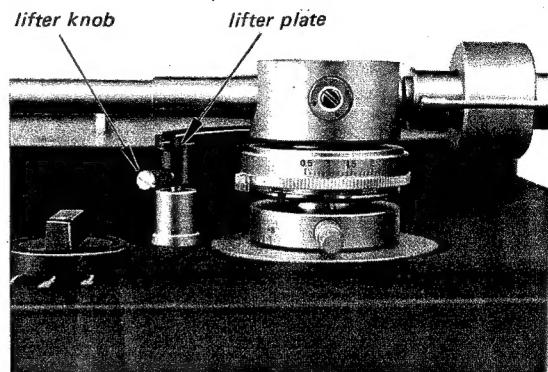
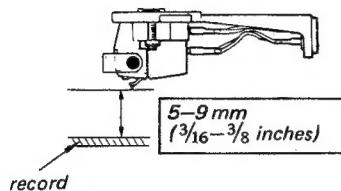
SECTION 3

ADJUSTMENTS

3-1. MECHANICAL ADJUSTMENT

LIFTER PLATE HEIGHT ADJUSTMENT

1. Bring the tonearm above the record.
2. Set the arm lifter to UP position.
Make sure that the distance between the record and the stylus is 5-9 mm ($3\frac{1}{16}$ - $3\frac{3}{8}$ inches).
3. If necessary, adjust the height of arm lifter by loosening the lifter knob.



3-2. ELECTRICAL ADJUSTMENTS

SPEED DETECTING HEAD (MGH) POSITION ADJUSTMENT

Make this adjustment when replacing the speed detecting head and the turntable.

The improper adjustment will result in wow and flutter and mis-operation of servo control.

1. Remove the turntable. (Refer to page 5.)
2. Temporarily, secure the head bracket (with head mounted) to the frame.
3. Stick a visiting card (0.3 mm in thickness) on the magnet-coated rim as shown in Fig. 9 (a).
4. Install the turntable described on page 5.
5. Bring the head above the visiting card as shown in Fig. 9 (b).

Adjust the position of head bracket so that the two heads touch the visiting card at the center of head slightly as shown in Fig. 9 (b).

6. Remove the turntable gently. Fix the two head bracket screws.
7. Remove the visiting card and install the turntable. Make sure that the two heads do not touch the magnet-coated rim.
8. Turn on the POWER switch and rotate the turntable at 33 rpm.
9. Connect an oscilloscope across the head as shown in Fig. 11.
10. Make sure that the waveform on the oscilloscope is shown in Fig. 10.
11. Adjust the two screws (*1) when phase difference is improper, and the two screws (*2) when output voltage is improper. (Refer to Fig. 9 (b).)

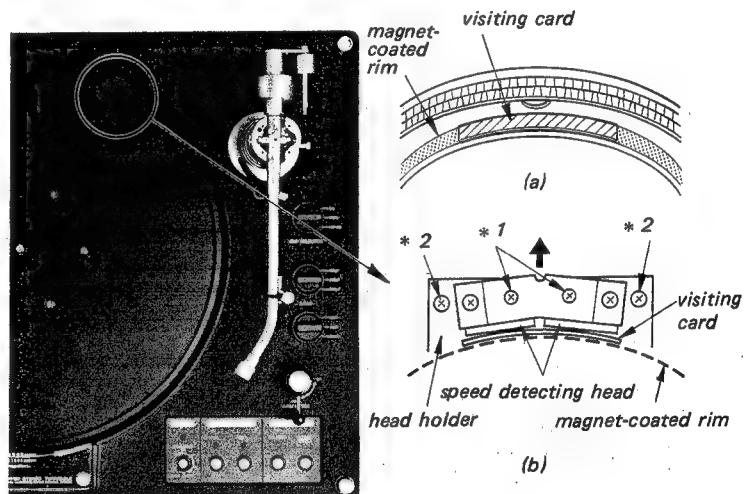
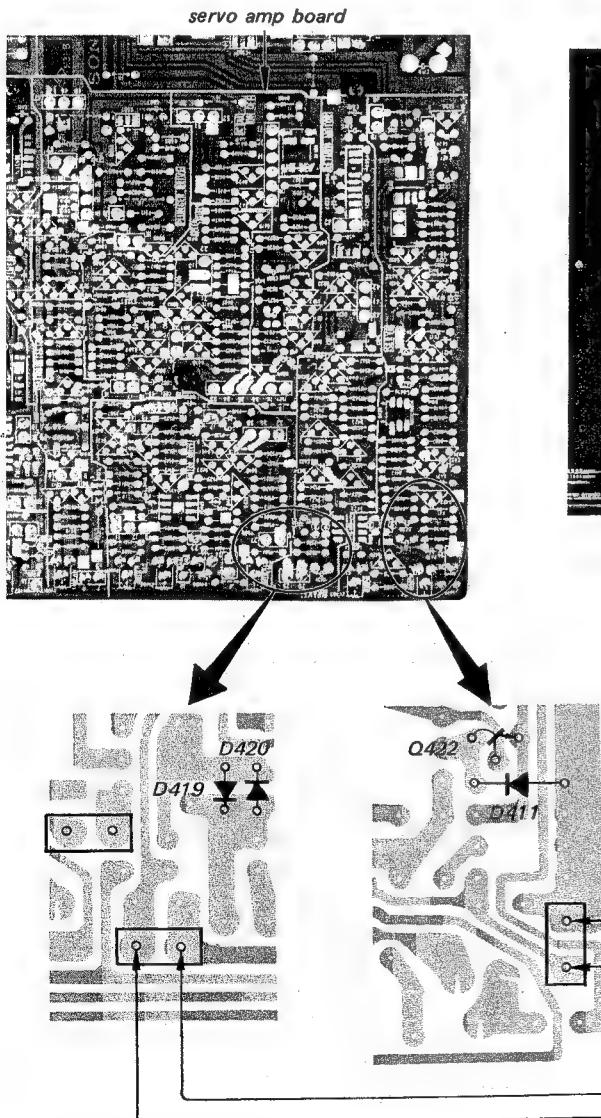


Fig. 9

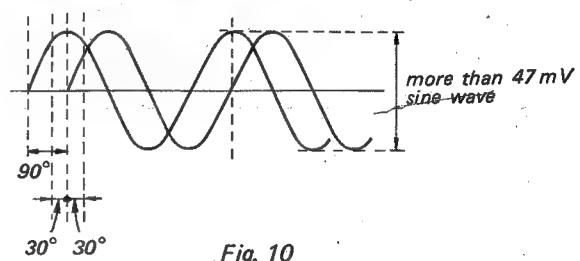


Fig. 10

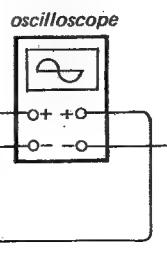
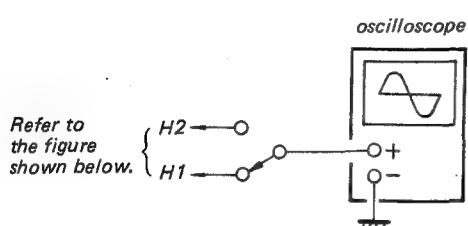


Fig. 11

HALL DEVICE GAIN ADJUSTMENT (33 1/3 rpm)

1. Disconnect the jumper wire, and supply 1V dc as shown in Fig. 14.
2. Connect an oscilloscope to H1 and adjust RV405 and RV406 for 6Vp-p on the oscilloscope.
3. Connect an oscilloscope to H2 and adjust RV405 and RV406 for 6Vp-p on the oscilloscope.
4. Repeat the steps 2 and 3 two or three times.



Note: Set the sweep time longer for easy checking the waveform.

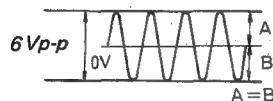


Fig. 12

MOTOR AMP OFFSET ADJUSTMENT (33 1/3 rpm)

1. Disconnect the jumper wire, and supply 1V dc as shown in Fig. 14.
2. Connect a VTVM (or oscilloscope) to H1 and adjust RV407 for 0V dc reading on the VTVM (for waveform shown below when using oscilloscope).
3. Connect a VTVM (or oscilloscope) to H2 and adjust RV408 for 0V dc reading on the VTVM (for waveform shown below when using oscilloscope).

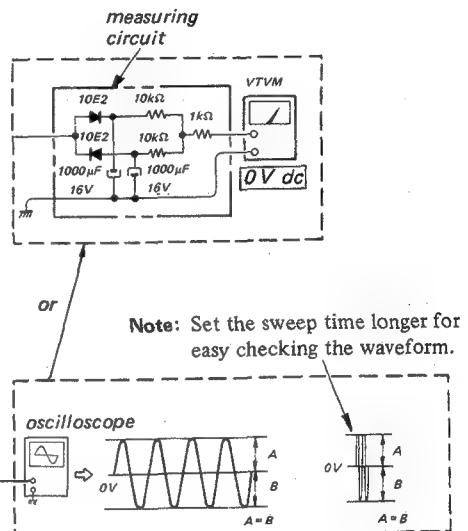


Fig. 13

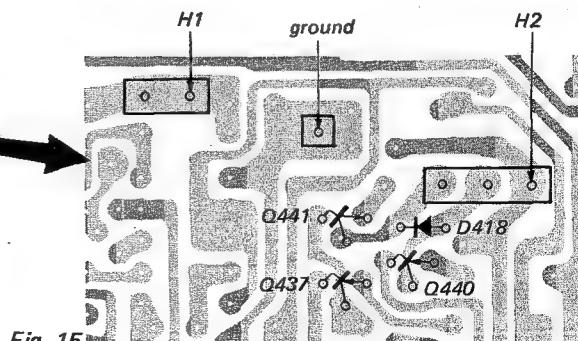
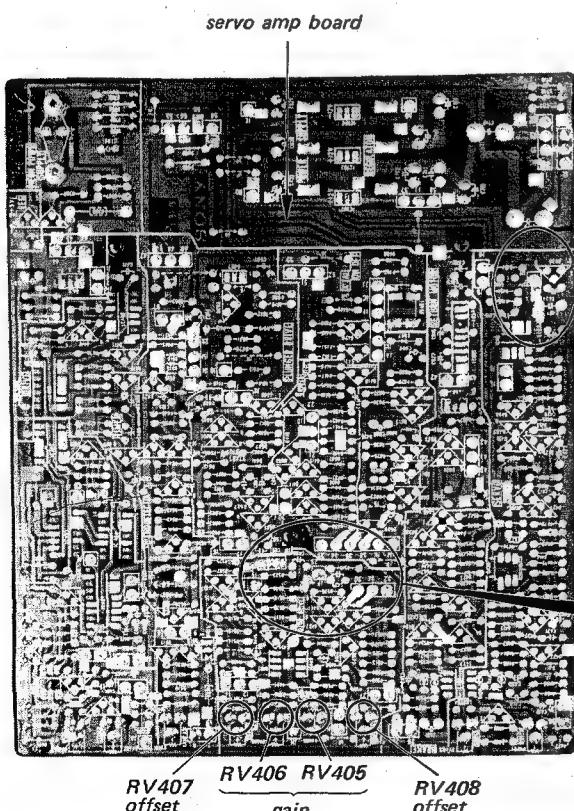
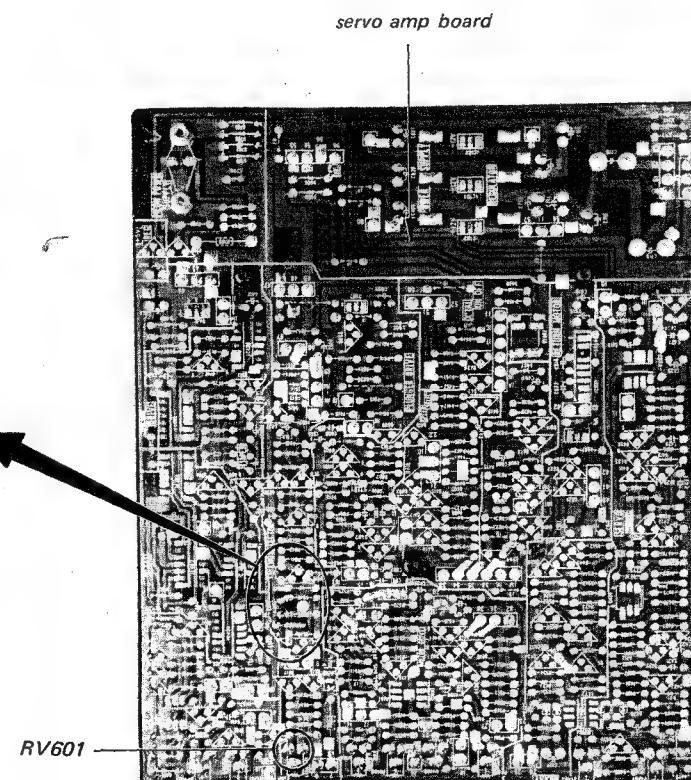
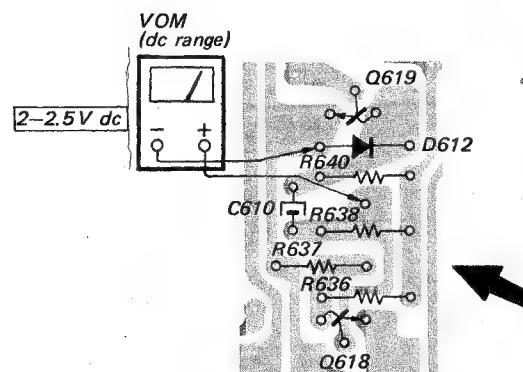
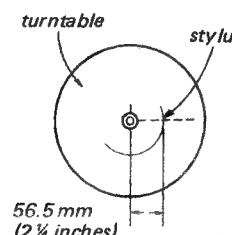
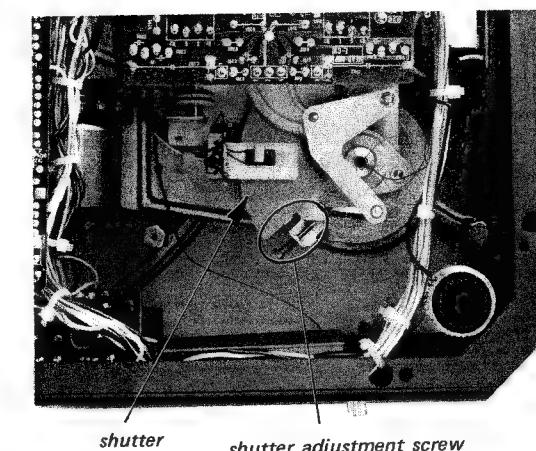


Fig. 15

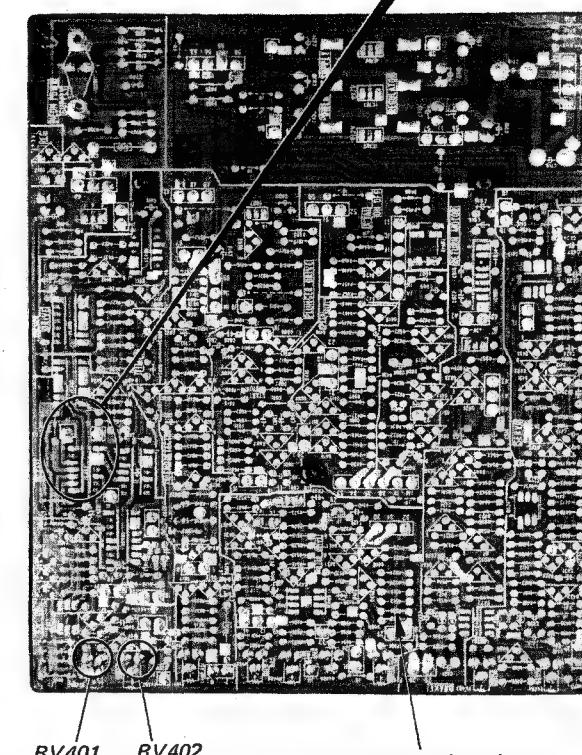
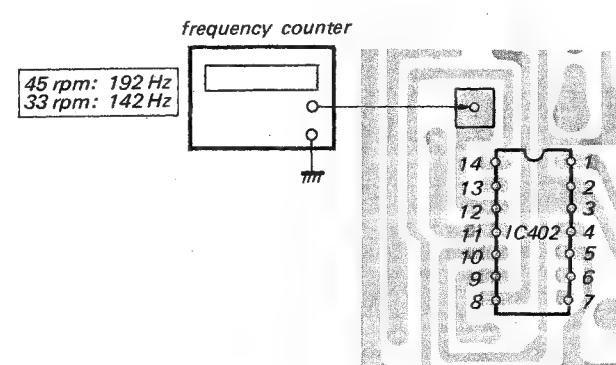
AUTOMATIC RETURN POSITION ADJUSTMENT

1. Connect a VOM as shown below.
2. Bring the tonearm toward out-of lead groove of record to the full.
3. Adjust RV601 for 2-2.5V dc reading on the VOM.
4. When the stylus is set as shown below, adjust the shutter adjustment screw for 8V dc reading on the VOM.
5. Play a test record (SONY YFSC-6, BAND 2) at 33 rpm. Confirm that the tonearm automatically returns within 15-17 counts. If not, adjust the shutter adjustment screw again.
6. Play a test record (SONY YFSC-6, BAND 3-6) at 33 rpm. Make sure that the tonearm returns only when 1 kHz signal sound is output from a speaker. If not, adjust RV601.
7. When RV601 is readjusted, repeat the steps 5 and 6.



OSCILLATOR FREQUENCY ADJUSTMENT

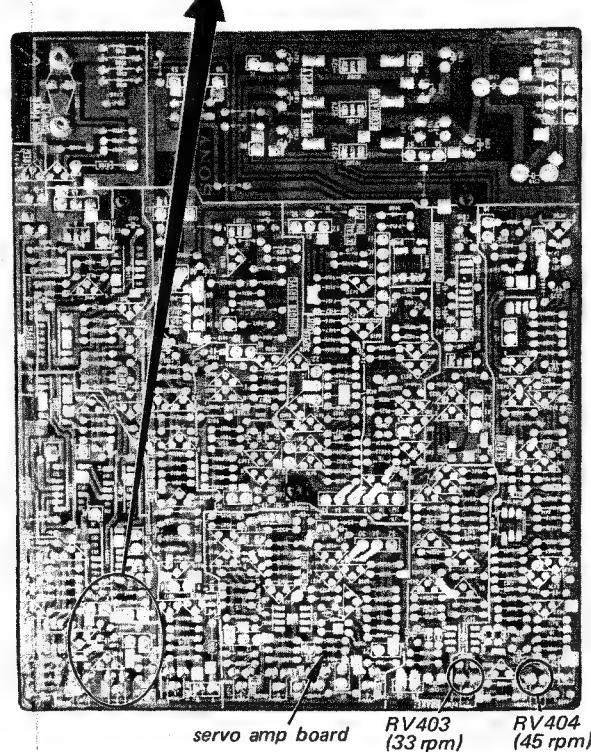
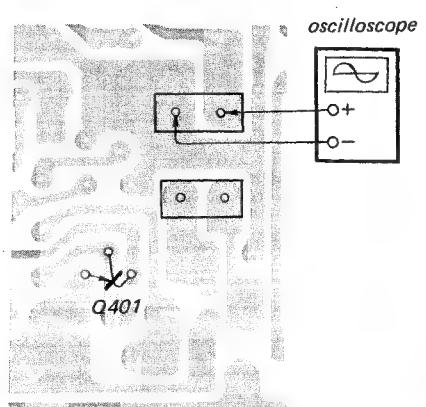
1. Connect a frequency counter to terminal (12) of IC402 on the servo amp board.
2. Set the speed switch to 45 rpm position.
3. Adjust RV402 for 192 Hz on the counter.
4. Set the speed switch to 33 rpm position.
5. Adjust RV401 for 142 Hz on the counter.



TURNTABLE SPEED ADJUSTMENT

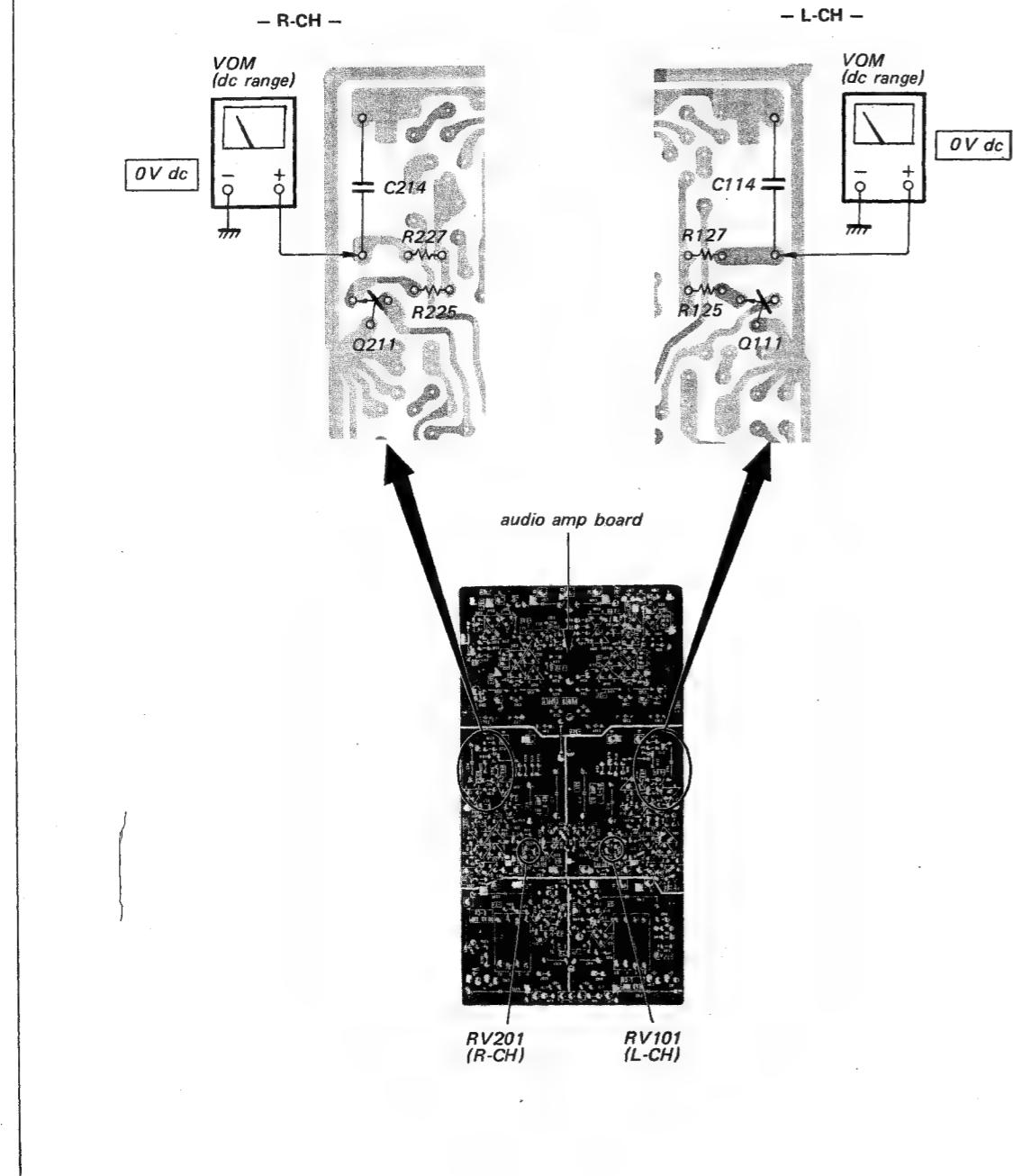
1. Connect an oscilloscope to terminal (9) of IC401.
2. Set the crystal-lock switch to X'TAL-LOCK position.
3. Set the speed switch to 45 rpm position.
4. Adjust RV404 for waveform on the oscilloscope as shown below.
5. Set the speed switch to 33 rpm position.
6. Adjust RV403 for waveform on the oscilloscope as shown below.

5V - - - - as straight as possible
2.5V - - - - dotted lines sometimes appear
0V - - - - as straight as possible



DC BALANCE ADJUSTMENT

1. Turn on the POWER switch.
2. Adjust RV101 (L-CH) and RV201 (R-CH) for 0V dc on the VOM with no signal input.



Replacement Semiconductors

For replacement, use semiconductors except in ().

Q402 Q407-412 Q414-424 Q429-432 Q429-448 Q601-606 Q609-614 Q616-624 Q626, 1502 Q434, 436 Q439, 441 Q608:	2SC1364	Q701: 2SC1431	Q702: 2SC926A	D409, 410 D415, 416 D419, 420 D604, 606
				anode cathode
				D401-404 D411-414 D417, 418 D421-424 D601-603 D611-616 D1501, 1502: 1S1555 D407, 605:
				1S1555 (1T40)
				D405, 408 D608, 609 D704, 1001
				RD3.9E
				D406: EQB01-05 (EQA01-05R) D607: EQB01-13 (EQA01-13) D610: EQB01-06 (EQA01-06R) D709, 711: EQB01-33 (EQA01-33R) D710: EQB01-20 (EQA01-20R) D712: EQB01-18 (EQA01-18R) D713: EQB01-12Z (EQA01-12R)
				D702, 703: S2VB20
				D705-708: 10E2 (GP08D)
				D751-754: U05G (U05E) D755-757: SLP24B
				D1503-1506: S34
				H1, 2: 5GF-MS-07F

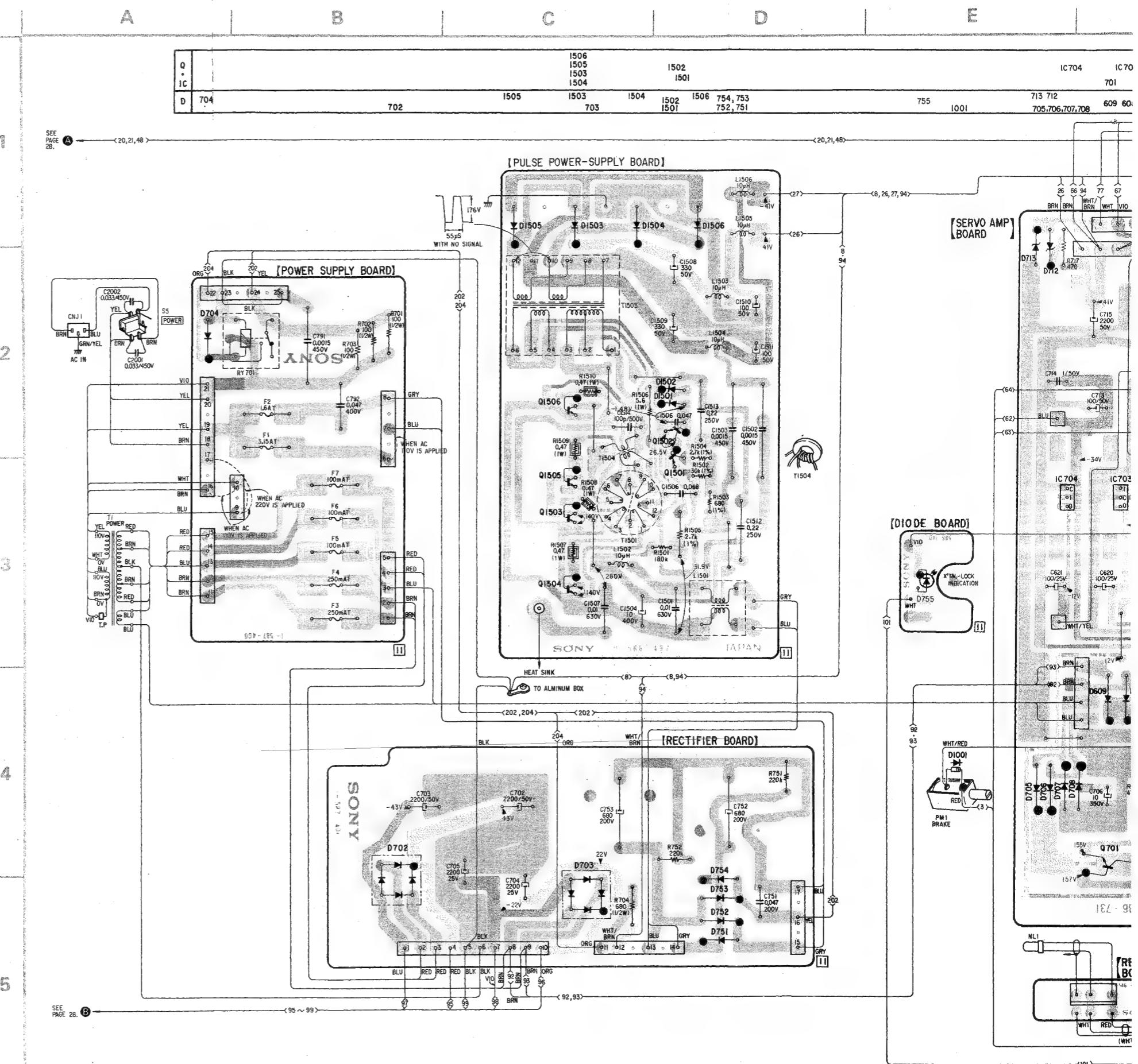
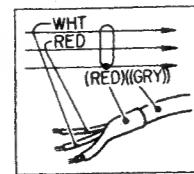
SECTION 4
DIAGRAMS4-1. MOUNTING DIAGRAM
(SYSTEM CONTROL SECTION)

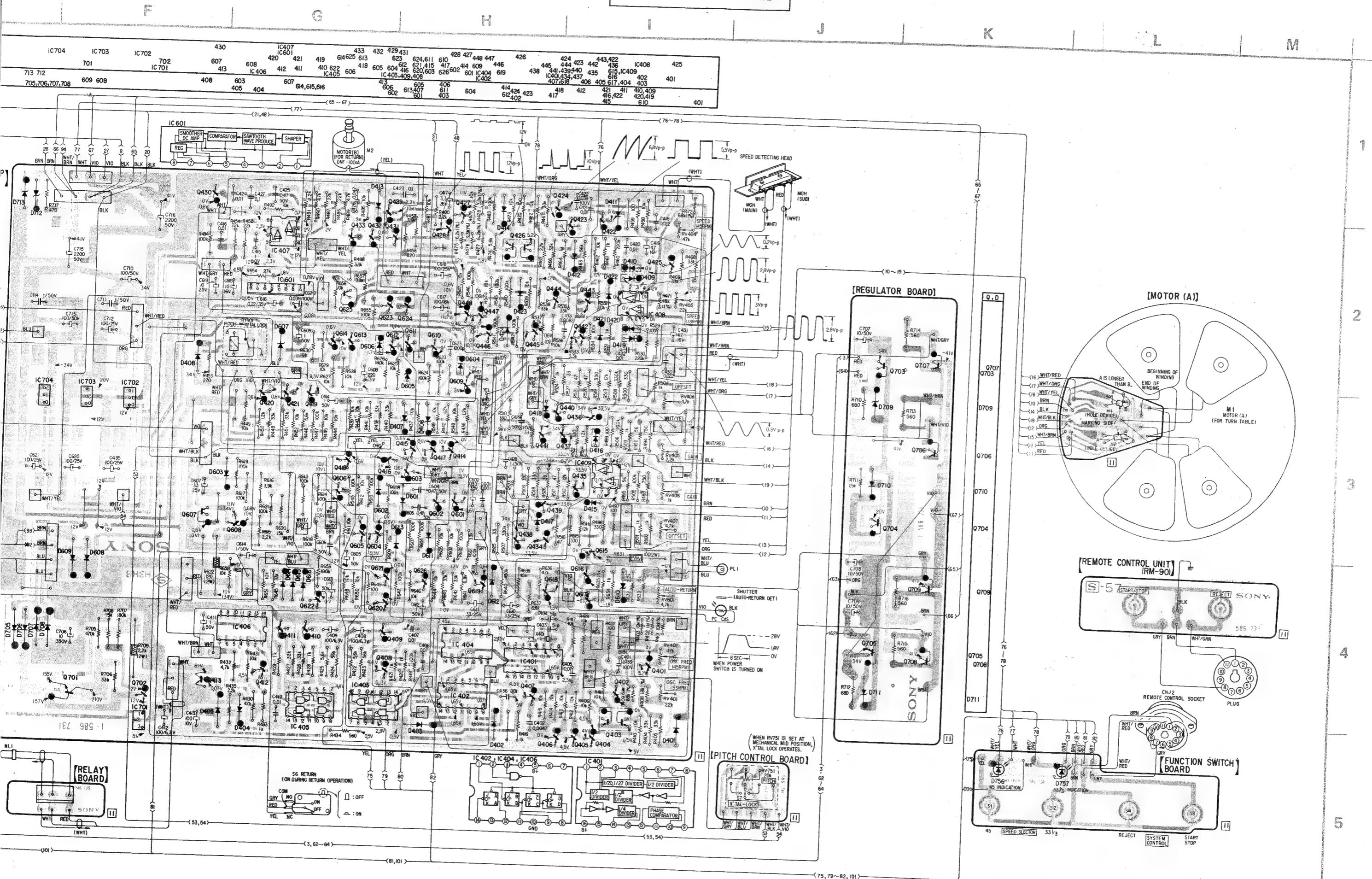
— Conductor Side —

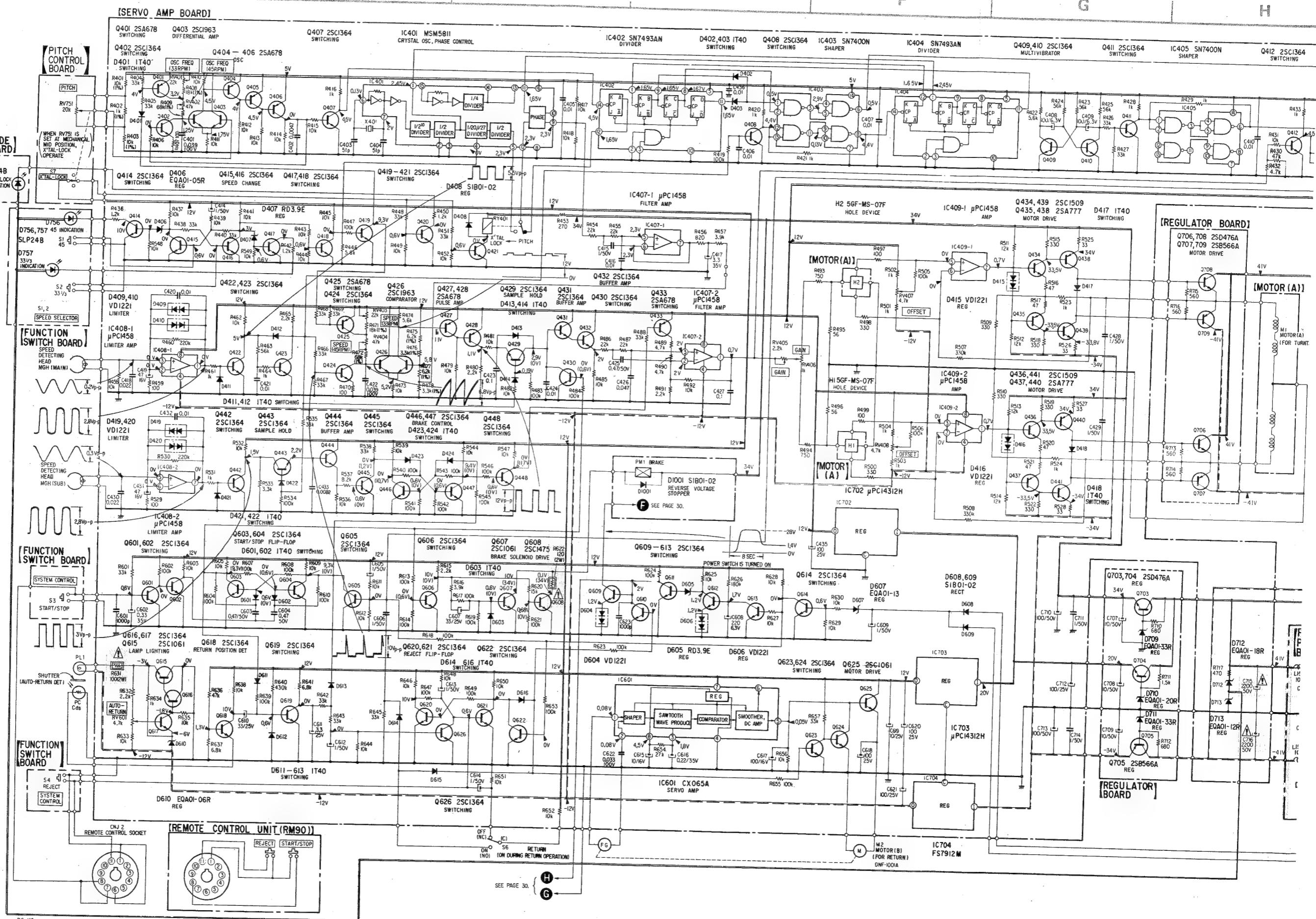
Replacement Semiconductors: See page 18.

Note:

- ○: parts extracted from the component side.
- ■: B+ pattern
- □: B- pattern
- Color code of sleeving over the end of the jacket.

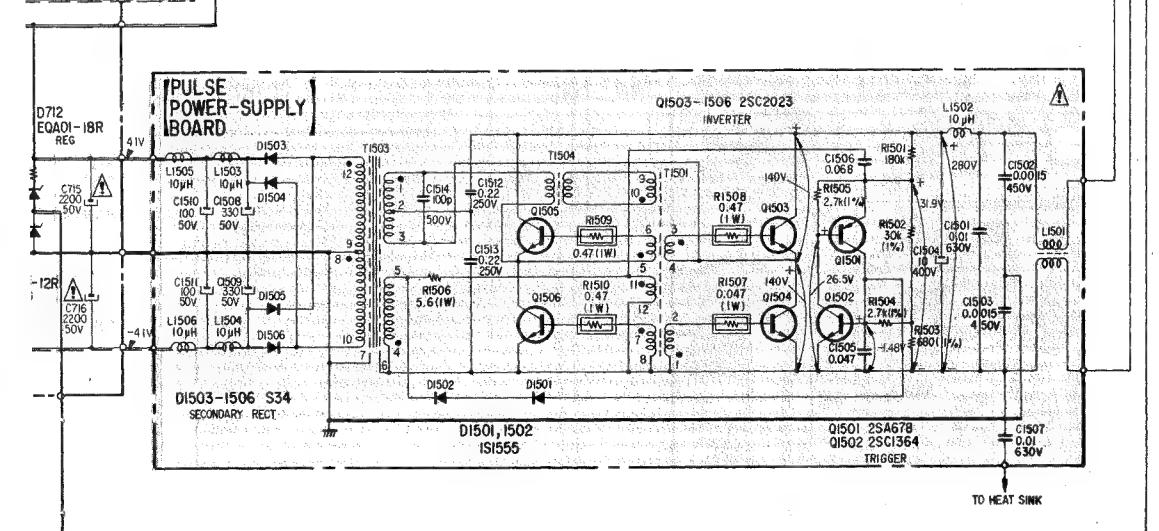
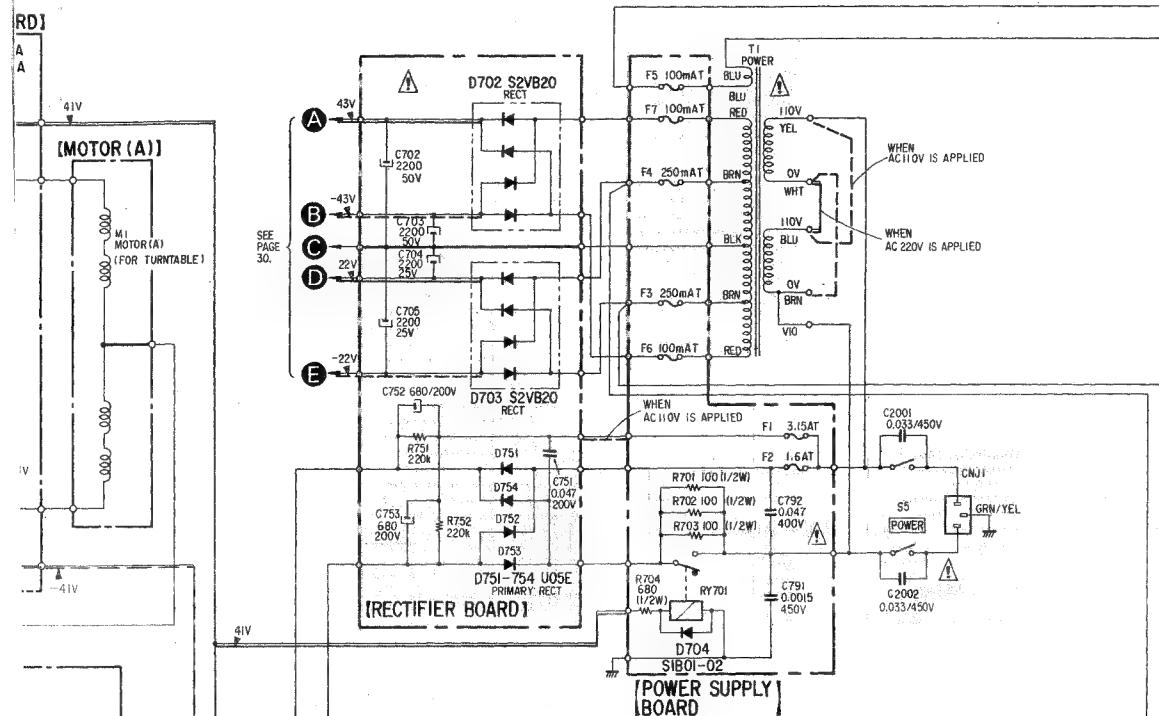
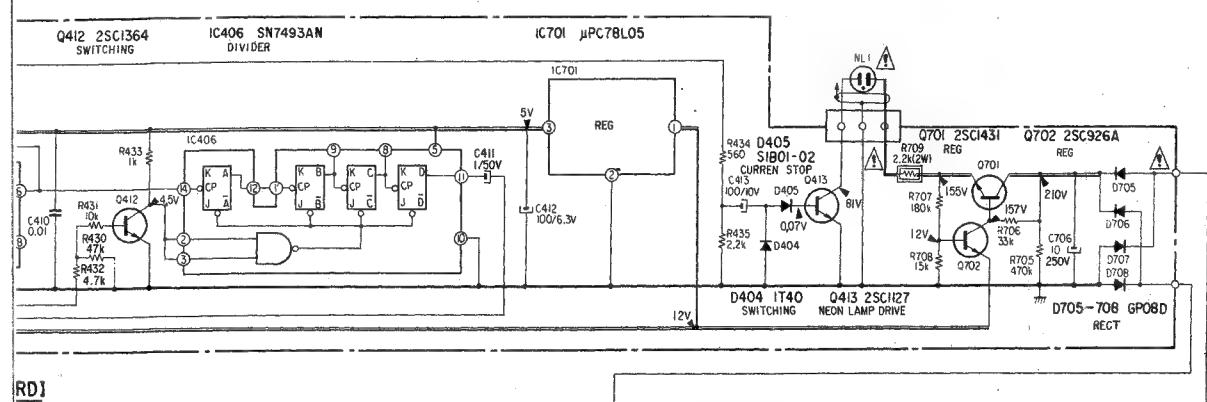






Replacement Semiconductors

For replacement, use semiconductors except in ().



Note:

- All capacitors are in μ F unless otherwise noted. pF: $\mu\mu$ F 50WV or less are not indicated except for electrolytics and tantalum.
- All resistors are in ohms, $\frac{1}{4}$ W unless otherwise noted. k Ω : 1000 Ω ; M Ω : 1000 k Ω
- : nonflammable resistor.
- : panel designation.
- : adjustment for repair.
- : B+ bus.
- : B- bus.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken under no-signal conditions with a VOM (20 k Ω /V).
- () : stop
- Voltage variations may be noted due to normal production tolerances.
- (1%) indicates component tolerance.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- Switch

Ref. No.	Switch	Position
S1	45 } SPEED	OFF
S2	33 1/3 } SELECTOR	OFF
S3	START/STOP } SYSTEM	OFF
S4	REJECT } CONTROL	OFF
S5	POWER	OFF
S6	RETURN	OFF
S7	X'TAL-LOCK	ON

Q101, 201	2SC1775E (2SC1775)
Q104, 204	
Q106, 206	
Q109, 209	
Q112, 212	
Q113, 213	
Q304, 306	
Q309, 311	
Q313, 314	
Q102, 202	2SC1811
Q111, 211	
Q103, 203	2SK43-2 (2SK43)
Q114, 214	
Q303, 316	
Q308, 321	2SK43-5 (2SK43)
Q105, 205	2SA872E (2SA872)
Q108, 208	
Q110, 210	
Q301, 302	
Q315, 317	
Q320, 322	
Q115, 215	2SA896
Q107, 207	2SK97
Q305: 2SC1061 (2SC1061C)	
Q310: 2SC1173	
Q307, 312	2SK30A
Q319, 324	2SA671
Q323: 2SA473	
D101, 201	VD1221 (VD1221M)
D102, 202	

B

C

D

E

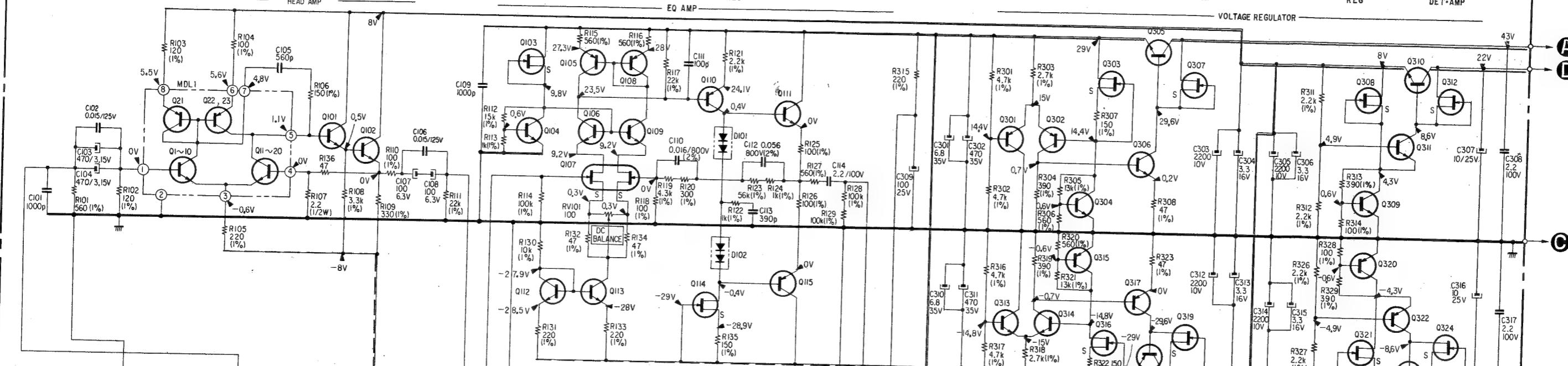
F

G

H

[AUDIO AMP BOARD]

L-CH

MDL 1
AMP
Q101 2SC1775
Q102 2SC1811
HEAD AMPQ103 2SK43
CURRENT REG
Q105,108 2SA872
CURRENT MIRROR
Q106,109 2SC1775
REG
Q112,113 2SC1775
CURRENT MIRROR
Q107 2SK97
EQ PREAMP
Q114 2SK43
CURRENT REG
Q115 2SA896
EQ AMP OUTQ106,109 2SC1775
CASCODE AMP
Q112 2SK97
EQ PREAMP
Q110,102 VDI221M
REG
Q301,302 2SA872
DIFFERENTIAL AMP
Q303 2SK43
CURRENT REG
Q305 2SC1061C
REG
Q307 2SK30A
CURRENT REG
Q308 2SK43
CURRENT REG
Q306 2SC1775
DET-AMP
Q309 2SC1775
DET-AMP
Q310 2SC1173
REG
Q312 2SK30A
CURRENT REG
Q311 2SC1775
DET-AMP

1

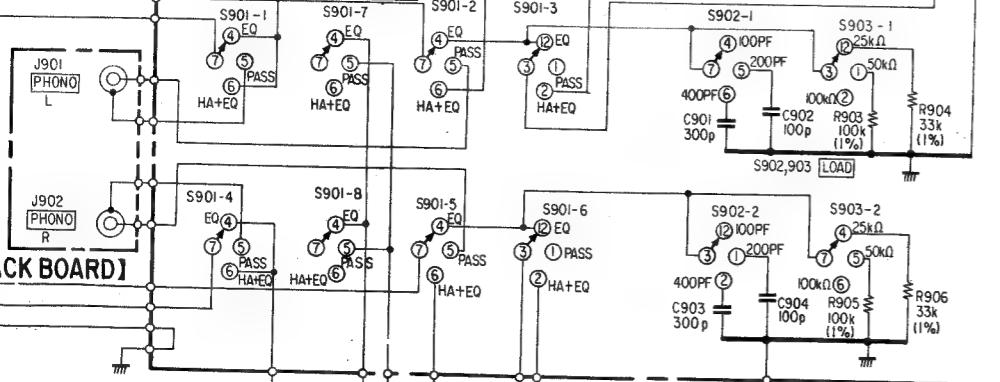
2

SEE PAGE
23-28

3

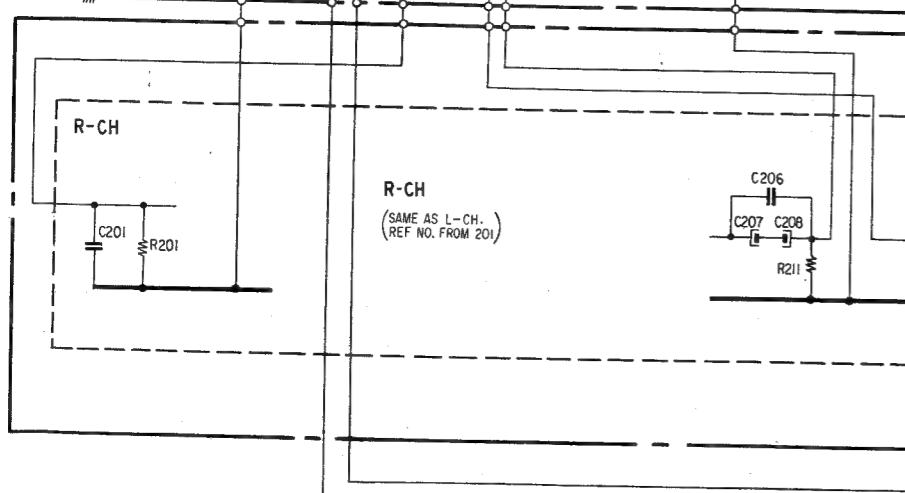
4

5



CK BOARD

[JACK BOARD]

Q313,314 2SC1775
Q315 2SA872
Q317 2SA872
Q319 2SK30A
Q316 2SK43
Q318 2SA671
VOLTAGE REGULATORQ320 2SA872
Q322 2SA872
Q324 2SK30A
Q321 2SK43
Q323 2SA473
VOLTAGE REGULATOR

H

G

SECTION 5

EXPLODED VIEWS

A

B

c

D

5-1. Note:

- Items with no part number and/or no description are not stocked because they are seldom required for routine service.
- All screws are Phillips (cross recess) type unless otherwise noted.
(-) = slotted head
- Circled letters (Ⓐ to Ⓛ) are applicable to European models only.

Note: The components identified by shading and mark  are critical for safety. Replace only with part number specified.

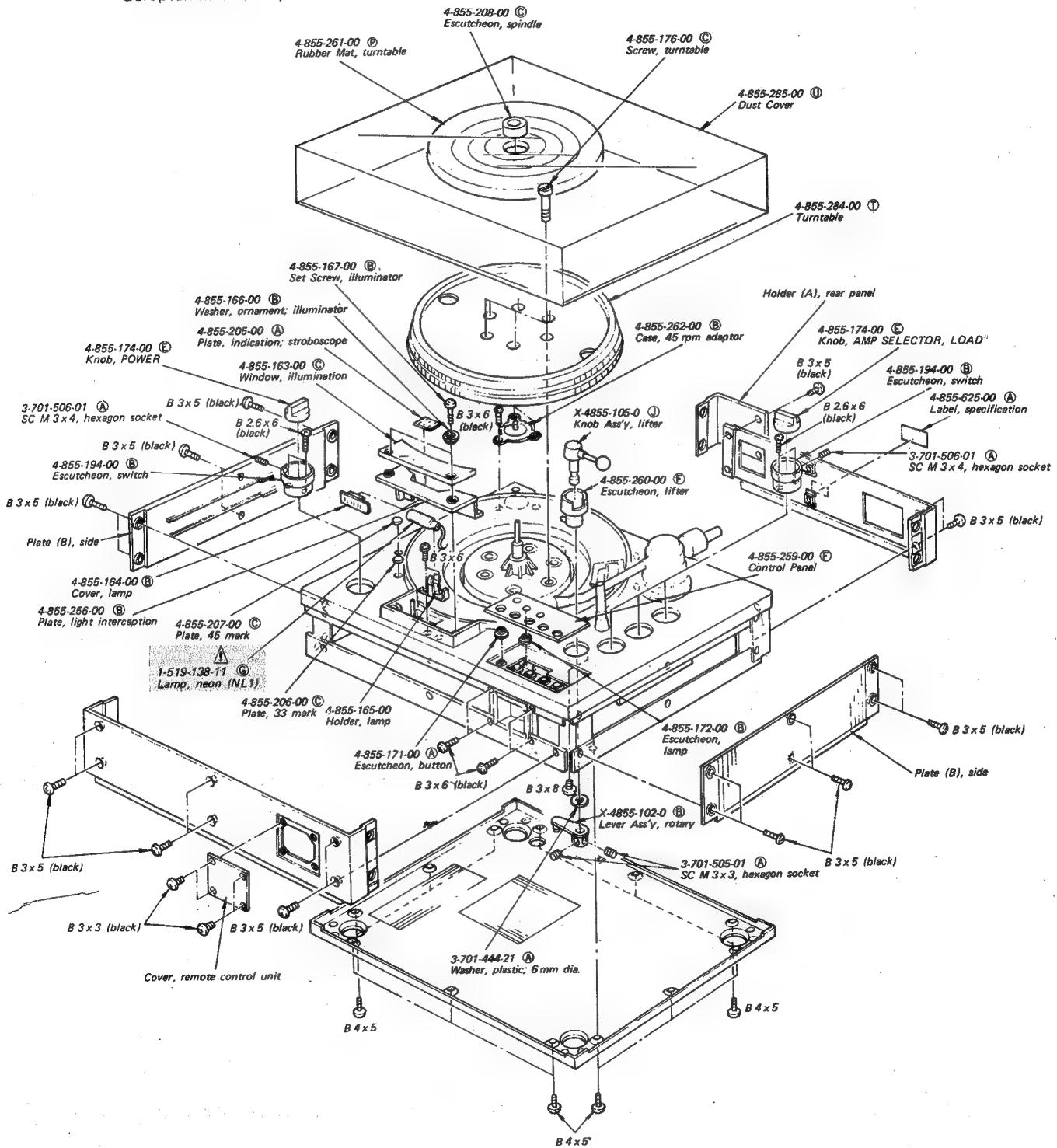
1

2

3

4

5



A

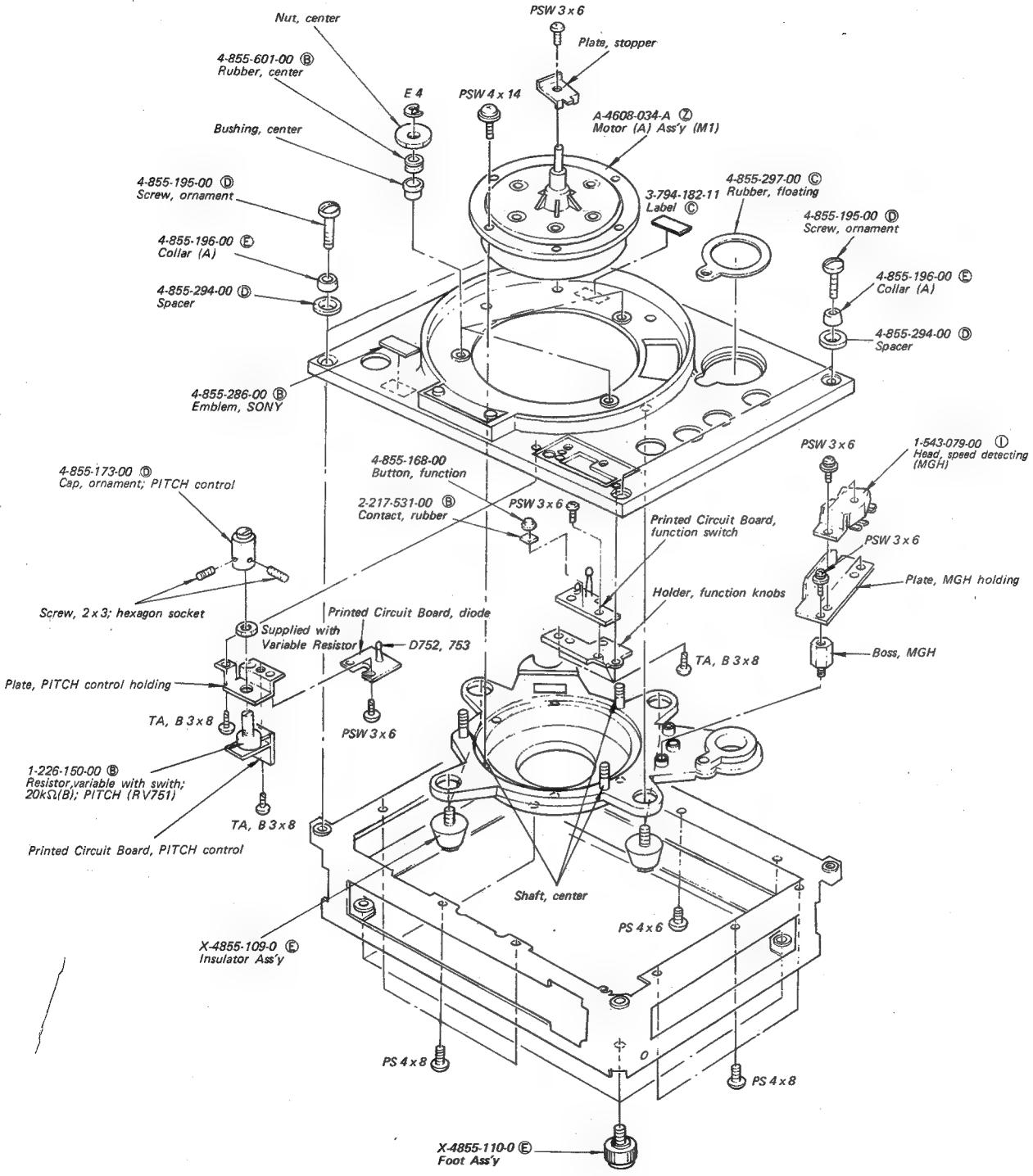
B

c

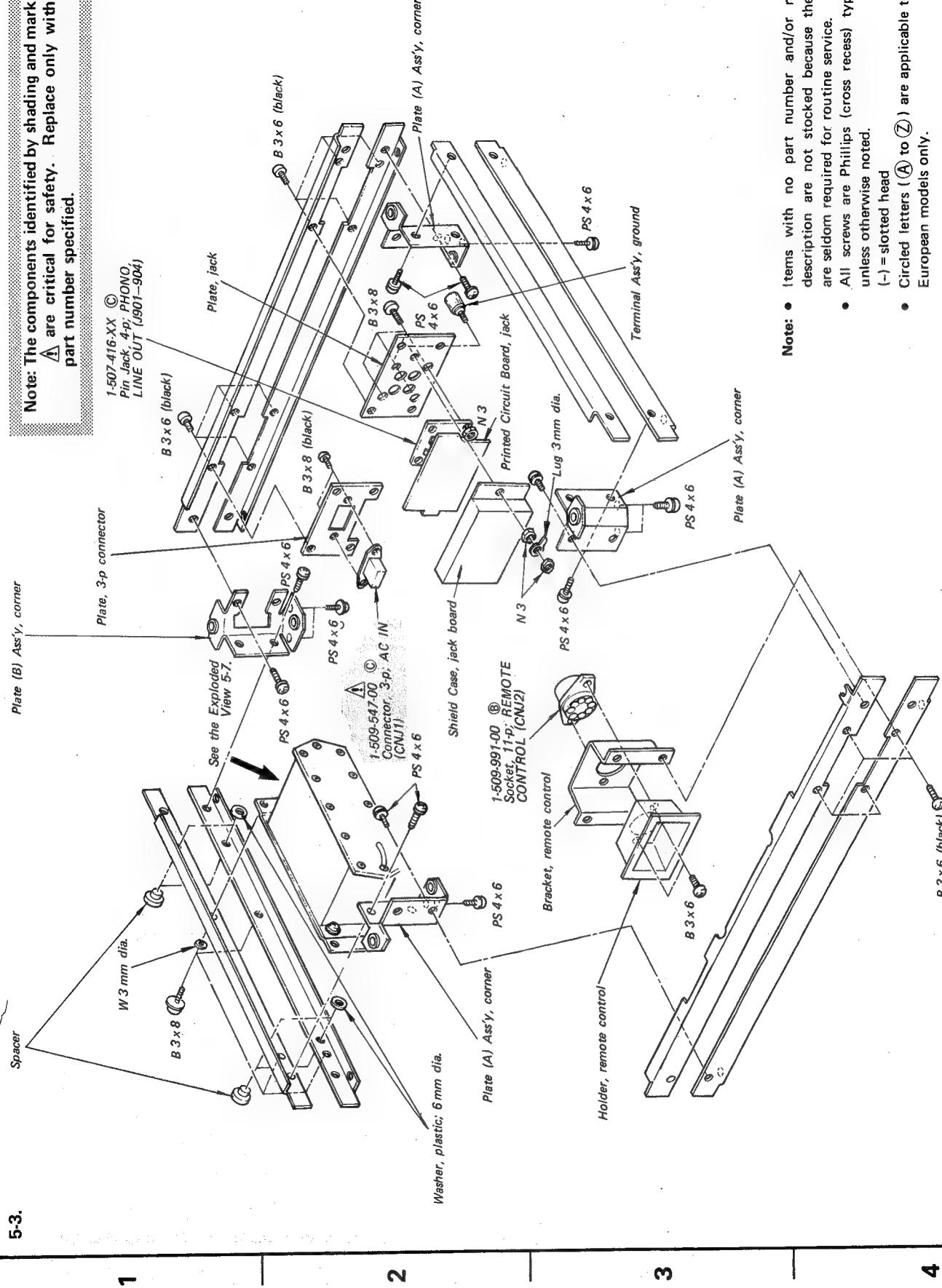
1

5-2. Note: • Items with no part number and/or no description are not stocked because they are seldom required for routine service.

- All screws are Phillips (cross recess) type unless otherwise noted.
(-) = slotted head
- Circled letters (Ⓐ to Ⓡ) are applicable to European models only.



Note: The components identified by shading and mark \triangle are critical for safety. Replace only with part number specified.



Note:

- Items with no part number and/or no description are not stocked because they are seldom required for routine service.
- All screws are Phillips (cross recess) type unless otherwise noted.
- (-) = slotted head
- Circled letters (Ⓐ to Ⓡ) are applicable to European models only.

A

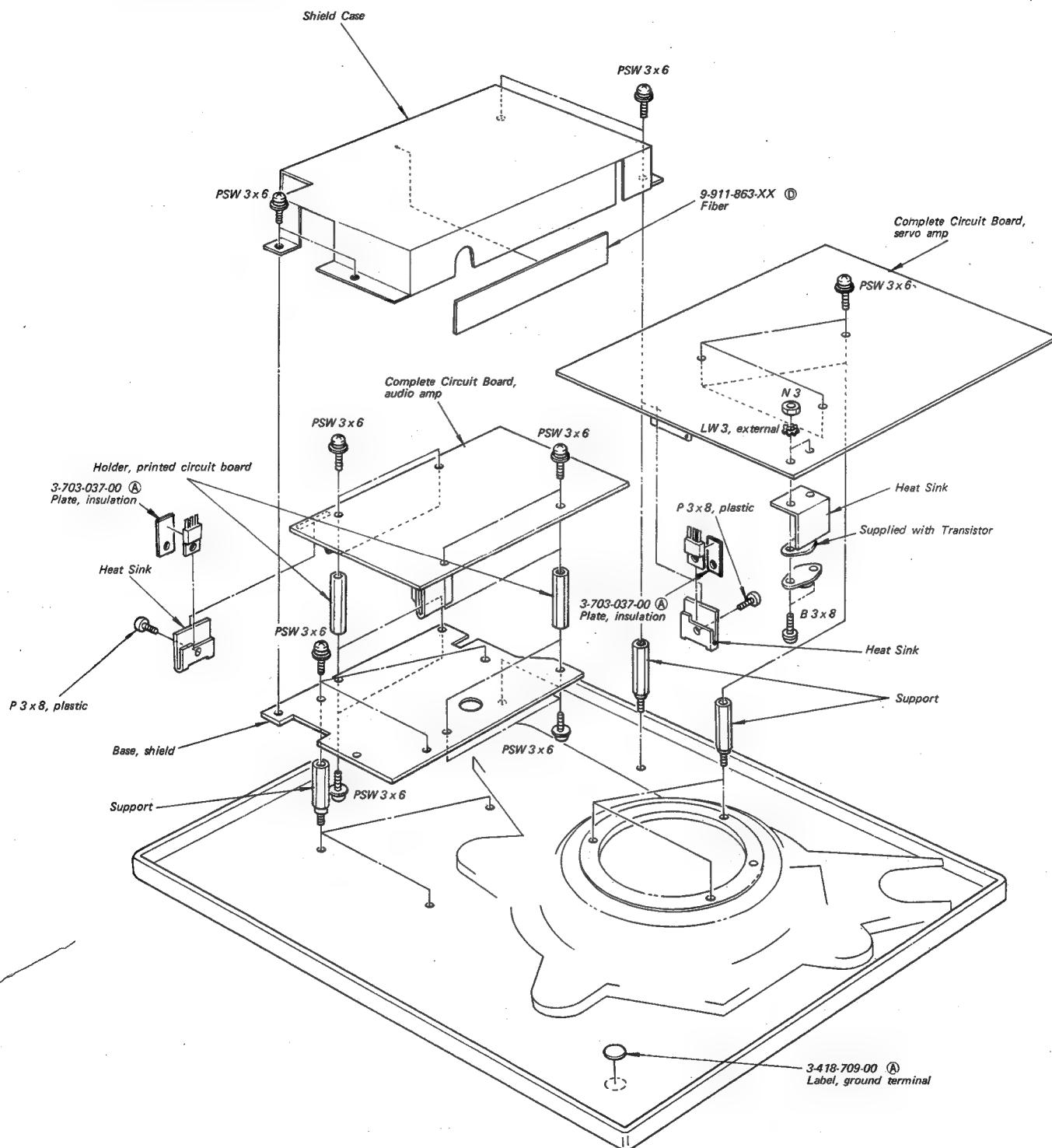
B

C

D

5-4. Note: • Items with no part number and/or no description are not stocked because they are seldom required for routine service.

- All screws are Phillips (cross recess) type unless otherwise noted.
(-) = slotted head
- Circled letters (Ⓐ to Ⓛ) are applicable to European models only.



A

B

C

D

5-5.

Note:

- Items with no part number and/or no description are not stocked because they are seldom required for routine service.
- All screws are Phillips (cross recess) type unless otherwise noted.
(-) = slotted head
- Circled letters (Ⓐ to Ⓡ) are applicable to European models only.

Note: The components identified by shading and mark
⚠ are critical for safety. Replace only with
part number specified.

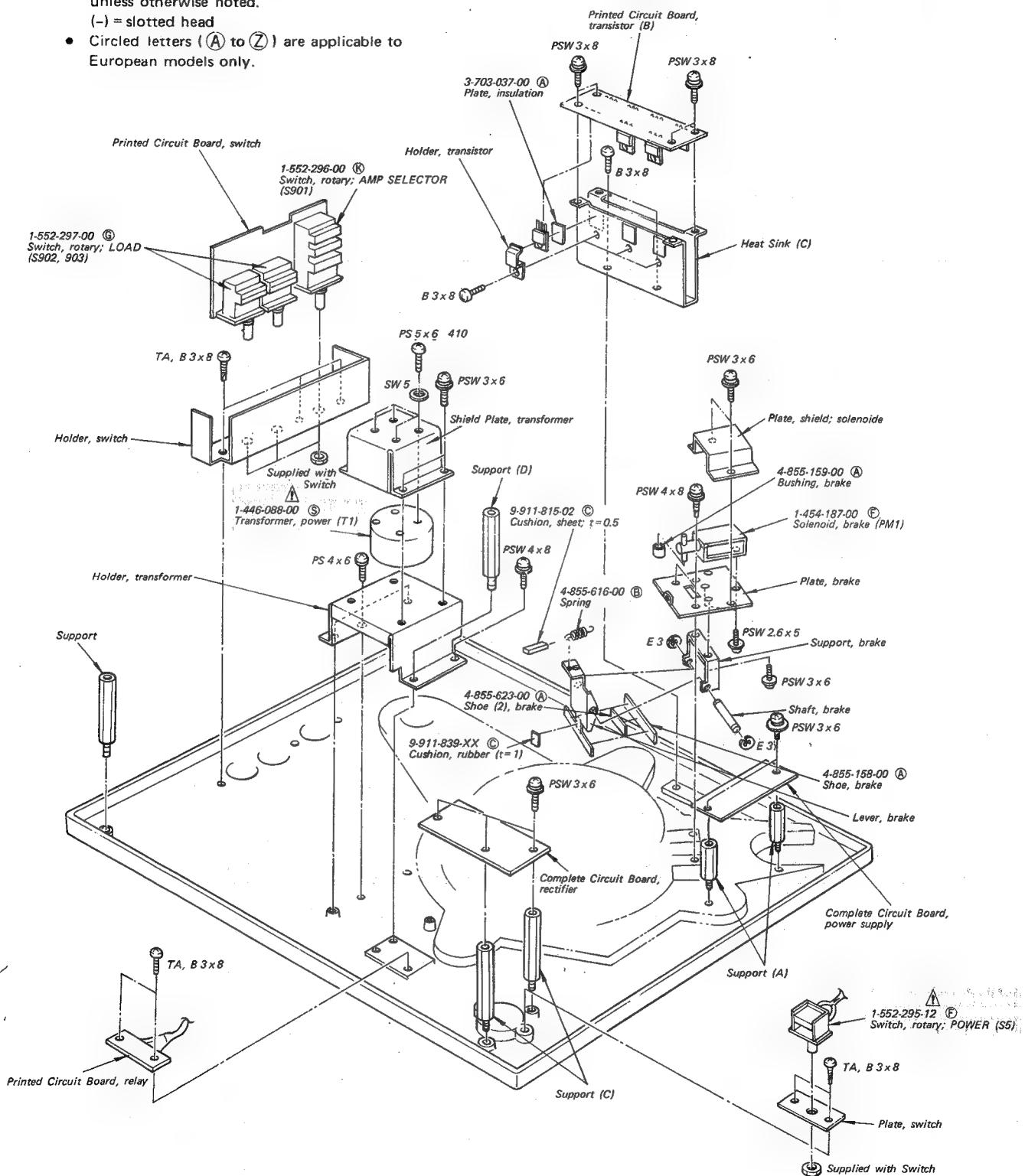
1

2

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4

5



A

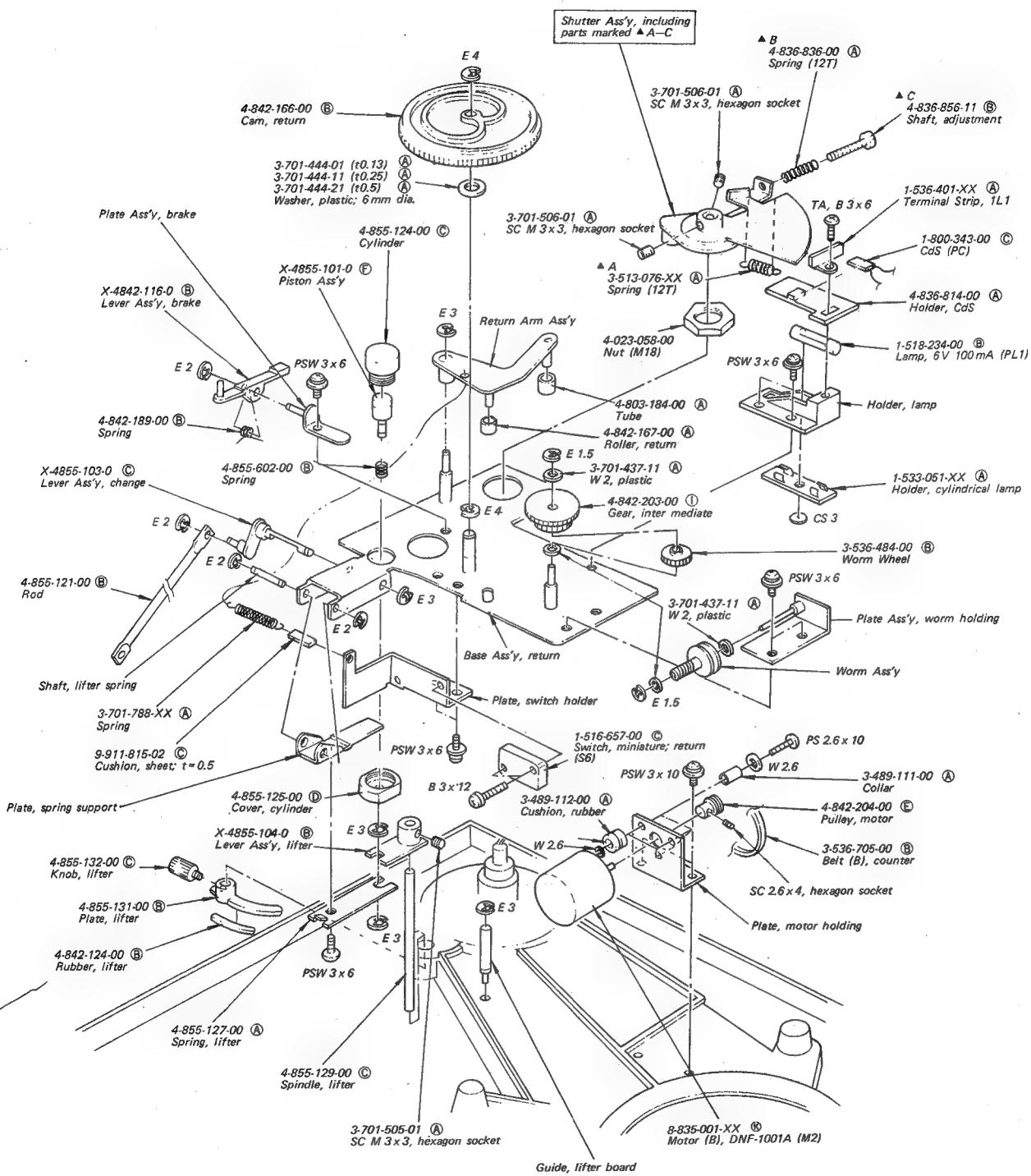
B

C

D

5-6. Note: • Items with no part number and/or no description are not stocked because they are seldom required for routine service.

- All screws are Phillips (cross recess) type unless otherwise noted.
(-) = slotted head
- (□○T) shows the number of coils in spring.
- Circled letters (Ⓐ) to (Ⓑ) are applicable to European models only.



A

B

C

D

5-7.

Note: • Items with no part number and/or no description are not stocked because they are seldom required for routine service.

- All screws are Phillips (cross recess) type unless otherwise noted.
- (-) = slotted head
- Les lettres entourées (Ⓐ à Ⓛ) ne sont applicables qu'aux modèles européens.

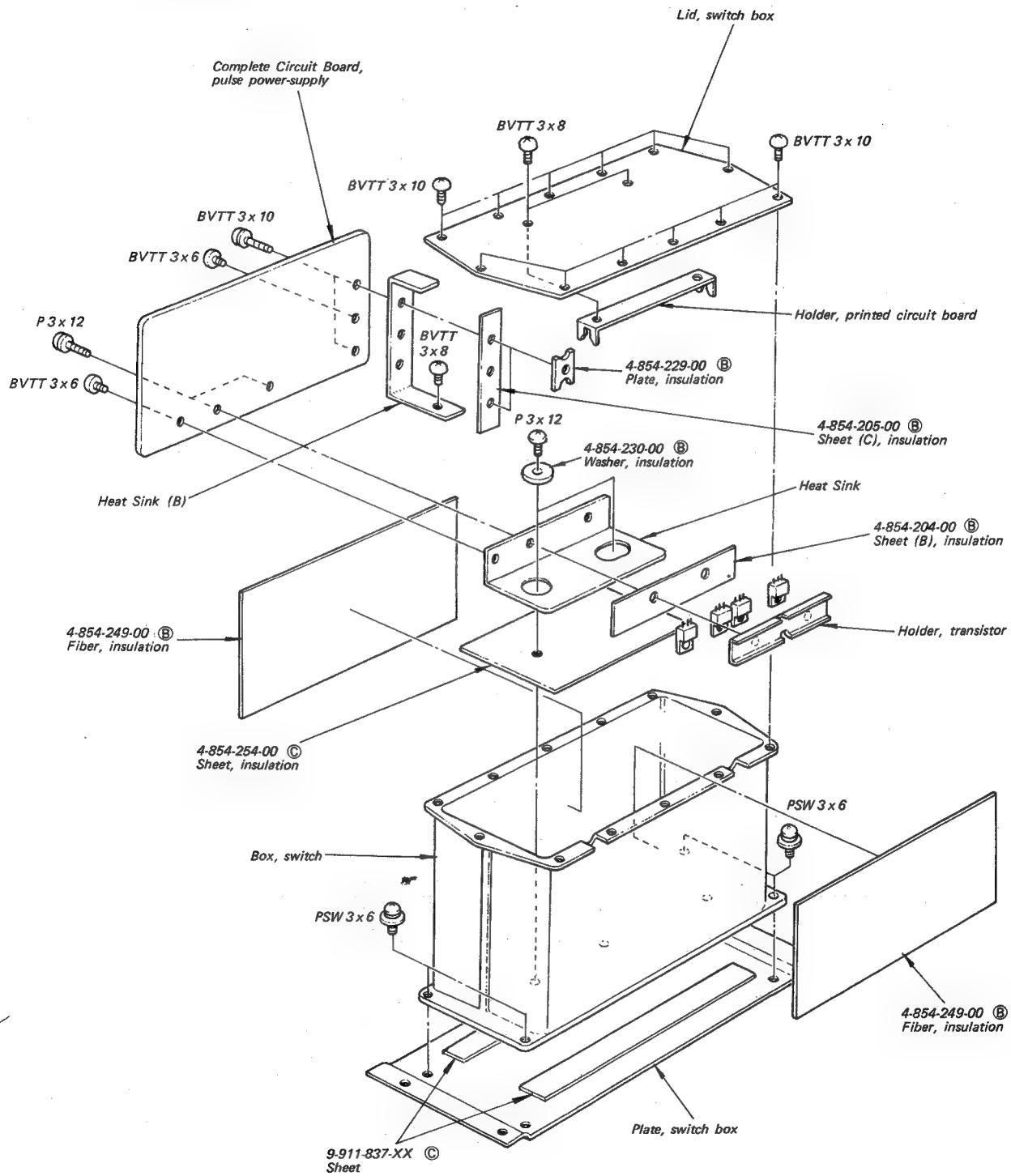
1

2

3

4

5



A

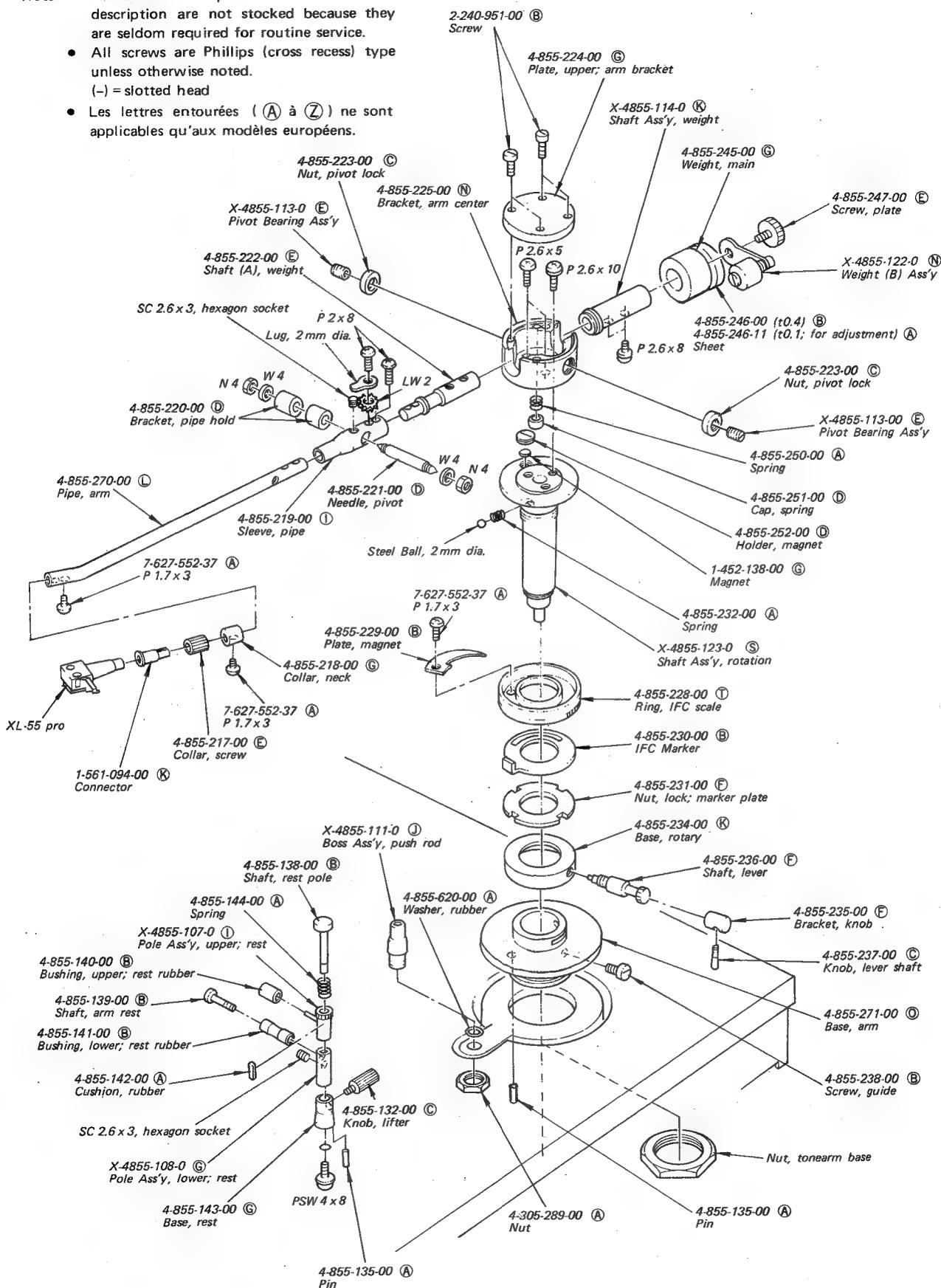
B

6

D

5-8. Note: • Items with no part number and/or no description are not stocked because they are seldom required for routine service.

- All screws are Phillips (cross recess) type unless otherwise noted.
(-) = slotted head
- Les lettres entourées (Ⓐ à Ⓛ) ne sont applicables qu'aux modèles européens.



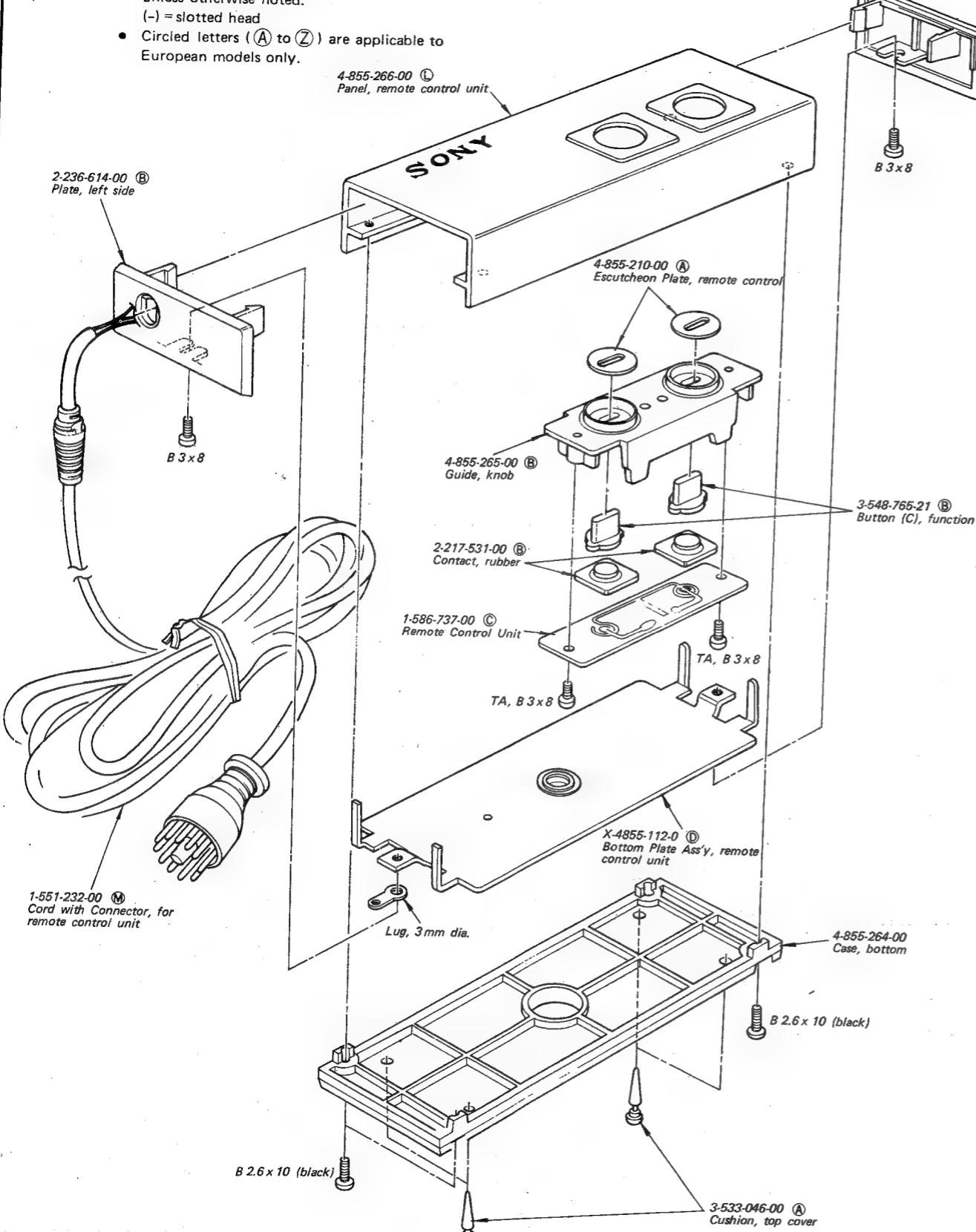
A

B

C

D

5-9. Note: • Items with no part number and/or no description are not stocked because they are seldom required for routine service.
 • All screws are Phillips (cross recess) type unless otherwise noted.
 (-) = slotted head
 • Circled letters (Ⓐ to Ⓛ) are applicable to European models only.



SECTION 6

ELECTRICAL PARTS LIST

Note: Circled letters (Ⓐ to Ⓛ) are applicable to European models only.

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
SEMICONDUCTORS					
Transistors					
⇒ Q101,201	8-729-377-58 Ⓛ	2SC1775E	Q324	8-729-203-04 Ⓛ	2SK30A
Q102,202	8-765-012-20 Ⓛ	2SC1811	⇒ Q401	8-729-389-37 Ⓛ	2SA893
⇒ Q103,203	8-723-302-00 Ⓛ	2SK43-2	Q402	8-729-633-47 Ⓛ	2SC1364
⇒ Q104,204	8-729-377-58 Ⓛ	2SC1775E	Q403	8-765-222-20 Ⓛ	2SC1963
⇒ Q105,205	8-729-387-28 Ⓛ	2SA872E	⇒ Q404-406	8-729-389-37 Ⓛ	2SA893
⇒ Q106,206	8-729-377-58 Ⓛ	2SC1775E	Q407-412	8-729-633-47 Ⓛ	2SC1364
Q107,207	8-765-342-10 Ⓛ	2SK97	⇒ Q413	8-729-322-78 Ⓛ	2SC2278
⇒ Q108,208	8-729-387-28 Ⓛ	2SA872E	Q414-424	8-729-663-47 Ⓛ	2SC1364
⇒ Q109,209	8-729-377-58 Ⓛ	2SC1775E	⇒ Q425	8-729-389-37 Ⓛ	2SA893
⇒ Q110,210	8-729-387-28 Ⓛ	2SA872E	Q426	8-765-222-20 Ⓛ	2SC1963
Q111,211	8-765-012-20 Ⓛ	2SC1811	⇒ Q427,428	8-729-389-37 Ⓛ	2SA893
⇒ Q112,212	8-729-377-58 Ⓛ	2SC1775E	Q429-432	8-729-663-47 Ⓛ	2SC1364
⇒ Q113,213	8-729-377-58 Ⓛ	2SC1775E	⇒ Q433	8-729-389-37 Ⓛ	2SA893
⇒ Q114,214	8-723-302-00 Ⓛ	2SK43-2	Q434	8-729-450-93 Ⓛ	2SC1509
Q115,215	8-765-082-20 Ⓛ	2SA896	Q435	8-729-477-73 Ⓛ	2SA777
⇒ Q301,302	8-729-387-28 Ⓛ	2SA872E	Q436	8-729-450-93 Ⓛ	2SC1509
⇒ Q303	8-723-302-00 Ⓛ	2SK43-2	Q437,438	8-729-477-73 Ⓛ	2SA777
⇒ Q304	8-729-377-58 Ⓛ	2SC1775E	Q439	8-729-450-93 Ⓛ	2SC1509
⇒ Q305	8-729-316-12 Ⓛ	2SC1061	Q440	8-729-477-73 Ⓛ	2SA777
⇒ Q306	8-729-377-58 Ⓛ	2SC1775E	Q441	8-729-450-93 Ⓛ	2SC1509
Q307	8-729-203-04 Ⓛ	2SK30A	Q442-448	8-729-663-47 Ⓛ	2SC1364
⇒ Q308	8-723-305-00 Ⓛ	2SK43-5	Q601-606	8-729-663-47 Ⓛ	2SC1364
⇒ Q309	8-729-377-58 Ⓛ	2SC1775E	Q607	8-729-316-12 Ⓛ	2SC1061
Q310	8-729-217-33 Ⓛ	2SC1173	Q608	8-760-413-10 Ⓛ	2SC1475
⇒ Q311	8-729-377-58 Ⓛ	2SC1775E	Q609-614	8-729-663-47 Ⓛ	2SC1364
Q312	8-729-203-04 Ⓛ	2SK30A	Q615	8-729-316-12 Ⓛ	2SC1061
⇒ Q313,314	8-729-377-58 Ⓛ	2SC1775E	Q616-624	8-729-663-47 Ⓛ	2SC1364
⇒ Q315	8-729-387-28 Ⓛ	2SC872E	Q625	8-729-316-12 Ⓛ	2SC1061
⇒ Q316	8-723-302-00 Ⓛ	2SK43-2	Q626	8-729-663-47 Ⓛ	2SC1364
⇒ Q317	8-729-387-28 Ⓛ	2SA872E	Q701	8-760-122-01 Ⓛ	2SC1431
Q318	8-729-317-12 Ⓛ	2SA671	Q702	8-720-950-03 Ⓛ	2SC926A
Q319	8-729-203-04 Ⓛ	2SK30A	Q703,704	8-729-307-62 Ⓛ	2SD476A
⇒ Q320	8-729-387-28 Ⓛ	2SA872E	Q705	8-729-306-62 Ⓛ	2SB566A
⇒ Q321	8-723-305-00 Ⓛ	2SK43-5	Q706	8-729-307-62 Ⓛ	2SD476A
⇒ Q322	8-729-387-28 Ⓛ	2SA872E	Q707	8-729-306-62 Ⓛ	2SB566A
Q323	8-729-247-33 Ⓛ	2SA473	Q708	8-729-307-62 Ⓛ	2SD476A
⇒: Due to standardization, interchangeable replacements may be substituted for parts specified in the diagrams.					

Note: Circled letters (Ⓐ to Ⓡ) are applicable to European models only.

Ref. No.	Part No.	Description
⇒ Q1501	Ⓐ 8-729-389-37	Ⓑ 2SA893
Q1502	Ⓐ 8-729-633-47	Ⓓ 2SC1364
⇒ Q1503	Ⓐ 8-729-302-31	Ⓔ 2SC2023-R
⇒ Q1506 H1,2	8-719-905-07	Ⓓ 5GF-MS-07F
		Diodes
⇒ D101,201	8-719-122-10	Ⓐ VD1221
⇒ D102,202		
⇒ D401-404	8-719-815-55	Ⓑ 1S1555
⇒ D405	8-719-200-02	Ⓑ 10E2
⇒ D406	8-719-931-05	Ⓑ EQB01-05
D407	8-719-139-07	Ⓑ RD3.9E
⇒ D408	8-719-200-02	Ⓑ 10E2
D409,410	8-719-122-10	Ⓐ VD1221
⇒ D411-414	8-719-815-55	Ⓑ 1S1555
D415,416	8-719-122-10	Ⓐ VD1221
⇒ D417,418	8-729-815-55	Ⓑ 1S1555
D419,420	8-719-122-10	Ⓐ VD1221
⇒ D421-424	8-719-815-55	Ⓑ 1S1555
⇒ D601-603	8-719-815-55	Ⓑ 1S1555
D604	8-719-122-10	Ⓐ VD1221
D605	8-719-139-07	Ⓑ RD3.9E
D606	8-719-122-10	Ⓐ VD1221
⇒ D607	8-719-931-13	Ⓑ EQB01-13
⇒ D608,609	8-719-200-02	Ⓑ 10E2
⇒ D610	8-719-931-06	Ⓑ EQB01-06
⇒ D611-616	8-719-815-55	Ⓑ 1S1555
D702,703	Ⓐ 8-719-502-20	Ⓒ S2VB20
⇒ D704	8-719-200-02	Ⓑ 10E2
⇒ D705-708	Ⓐ 8-719-200-02	Ⓑ 10E2
⇒ D709	8-719-931-33	Ⓑ EQB01-33
⇒ D710	8-719-931-20	Ⓑ EQB01-20
⇒ D711	8-719-931-33	Ⓑ EQB01-33
⇒ D712	8-719-931-18	Ⓑ EQB01-18
⇒ D713	8-719-930-12	Ⓑ EQB01-12Z
⇒ D751-754	Ⓐ 8-719-911-55	Ⓑ U05G
D755-757	8-719-900-24	Ⓒ SLP24B
⇒ D1001	8-719-200-02	Ⓑ 10E2
D1501, D1502	Ⓐ 8-719-815-55	Ⓑ 1S1555

⇒: Due to standardization, interchangeable replacements may be substituted for parts specified in the diagrams.

Ref. No.	Part No.	Description
D1503	1 Ⓛ 8-719-303-41	Ⓒ S34
D1506		ICs

IC401	8-759-958-11	Ⓛ MSM5811
⇒ IC402	8-759-632-93	Ⓛ M53293P
⇒ IC403	8-759-632-00	Ⓛ M53200P
⇒ IC404	8-759-632-93	Ⓛ M53293P
⇒ IC405	8-759-632-00	Ⓛ M53200P

⇒ IC406	8-759-632-93	Ⓛ M53293P
⇒ IC407-409	8-759-114-58	Ⓔ μPC1458C

IC601	8-759-600-65	Ⓕ CX065A
IC701	8-759-178-05	Ⓒ μPC78L05
IC702,703	8-759-143-12	Ⓕ μPC14312H
IC704	8-759-379-12	Ⓛ FS7912M

COILS

L1501	Ⓐ 1-421-340-00	Ⓔ Choke, line filter
L1502	+	Ⓐ 1-421-329-00 Ⓛ Choke, 10μH

TRANSFORMERS AND FILTER

T1	Ⓐ 1-446-088-00	Ⓢ Power
T1501	Ⓐ 1-433-197-11	Ⓕ OSC
T1503	Ⓐ 1-446-087-00	Ⓛ Converter
T1504	Ⓐ 1-543-129-00	Ⓐ Core

CAPACITORS

All capacitors are in μ F and ceramic unless otherwise noted.
50WV or less are not indicated except for electrolytics. p: μ F, elect = electrolytic

C101,201	1-102-074-00	Ⓐ 1000p
C102,202	1-104-129-00	Ⓒ 0.015 125V styrol
C103,203	1-131-429-00	Ⓕ 470 3.15V tantalum
C104,204	1-102-115-00	Ⓐ 560p

Note: The components identified by shading and mark Ⓛ are critical for safety. Replace only with part number specified.

Ref. No.	Part No.	Description
C106,206	1-104-129-00	Ⓒ 0.015 125V styrol
C107,207	1-131-295-00	Ⓒ 100 6.3V tantalum
C108,208	1-102-074-00	Ⓐ 1000p
C109,209	1-130-145-00	Ⓑ 0.016 800V polyethylene (2%)

Ref. No.	Part No.	Description
C111,211	1-102-973-00	Ⓐ 100p
C112,212	1-130-146-00	Ⓒ 0.056 800V polyethylene (2%)
C113,213	1-102-822-00	Ⓐ 390p
C114,214	1-130-084-00	Ⓓ 2.2 100V polyethylene

Ref. No.	Part No.	Description
C301	1-131-239-00	Ⓑ 6.8 35V tantalum
C302	1-121-941-00	Ⓑ 470 35V elect
C303	1-123-074-00	Ⓐ 2200 10V elect
C304	1-131-449-00	Ⓒ 3.3 16V tantalum
C305	1-123-074-00	Ⓐ 2200 10V elect

Ref. No.	Part No.	Description
C306	1-131-449-00	Ⓒ 3.3 16V tantalum
C307	1-123-187-00	Ⓐ 10 25V elect
C308	1-130-084-00	Ⓓ 2.2 100V polyethylene
C309	1-121-935-00	Ⓑ 100 25V elect
C310	1-131-239-00	Ⓑ 6.8 35V tantalum

Ref. No.	Part No.	Description
C311	1-121-941-00	Ⓑ 470 35V elect
C312	1-123-074-00	Ⓐ 2200 10V elect
C313	1-131-449-00	Ⓒ 3.3 16V tantalum
C314	1-123-074-00	Ⓐ 2200 10V elect
C315	1-131-449-00	Ⓒ 3.3 16V tantalum

Ref. No.	Part No.	Description
C316	1-123-187-00	Ⓐ 10 25V elect
C317	1-130-084-00	Ⓓ 2.2 100V polyethylene
C401	1-130-140-00	Ⓑ 0.039 100V polyethylene
C402	1-108-800-00	Ⓐ 0.0047 mylar
C4		

Note: Circled letters (Ⓐ to Ⓛ) are applicable to European models only.

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>		<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	
C618	1-121-935-00	Ⓐ 100	25V elect	R109,209	1-214-120-00	Ⓐ 330	1/4W metal oxide (1%)
C619	1-123-187-00	Ⓐ 10	25V elect	R110,210	1-214-108-00	Ⓐ 100	1/4W metal oxide (1%)
C620,621	1-121-935-00	Ⓑ 100	25V elect	R111,211	1-214-164-00	Ⓐ 22k	1/4W metal oxide (1%)
C622	1-108-810-00	Ⓐ 0.033	100V mylar	R112,212	1-214-160-00	Ⓐ 15k	1/4W metal oxide (1%)
C623	1-101-918-00	Ⓐ 1000p		R113,213	1-214-132-00	Ⓐ 1k	1/4W metal oxide (1%)
C702,703	△ 1-125-136-00	Ⓔ 2200	50V elect	R114,214	1-214-180-00	Ⓐ 100k	1/4W metal oxide (1%)
C704,705	△ 1-123-067-00	Ⓐ 2200	25V elect	R115,215	1-214-126-00	Ⓐ 560	1/4W metal oxide (1%)
C706	△ 1-123-254-00	Ⓑ 10	250V elect	R116,216	1-214-164-00	Ⓐ 22k	1/4W metal oxide (1%)
C707-709	1-123-183-00	Ⓐ 10	50V elect	R117,217	1-214-108-00	Ⓐ 100	1/4W metal oxide (1%)
C710	1-123-059-00	Ⓑ 100	50V elect	R118,218	1-214-147-00	Ⓐ 4.3k	1/4W metal oxide (1%)
C711	1-123-228-00	Ⓑ 1	50V elect	R119,219	1-214-119-00	Ⓐ 300	1/4W metal oxide (1%)
C712	1-121-935-00	Ⓑ 100	25V elect	R120,220	1-214-140-00	Ⓐ 2.2k	1/4W metal oxide (1%)
C713	1-123-059-00	Ⓑ 100	50V elect	R121,221	1-214-132-00	Ⓐ 1k	1/4W metal oxide (1%)
C714	1-123-228-00	Ⓑ 1	50V elect	R122,222	1-214-174-00	Ⓐ 56k	1/4W metal oxide (1%)
C715,716	△ 1-125-136-00	Ⓔ 2200	50V elect	R123,223	1-214-132-00	Ⓐ 1k	1/4W metal oxide (1%)
C751	△ 1-129-773-00	Ⓐ 0.047	200V polyethylene	R124,224	1-214-108-00	Ⓐ 100	1/4W metal oxide (1%)
C752,753	△ 1-123-291-00	Ⓒ 680	200V elect	R125,225	1-214-126-00	Ⓐ 560	1/4W metal oxide (1%)
C791	△ 1-115-149-00	Ⓒ 0.0015	450V paper	R126,226	1-214-180-00	Ⓐ 100k	1/4W metal oxide (1%)
C792	△ 1-129-755-00	Ⓑ 0.047	400V polyethylene	R127,227	1-214-148-00	Ⓐ 4.7k	1/4W metal oxide (1%)
C901	1-102-981-00	Ⓐ 300p		R128,228	1-214-116-00	Ⓐ 220	1/4W metal oxide (1%)
C902	1-102-973-00	Ⓐ 100p		R129,229	1-214-142-00	Ⓐ 2.2k	1/4W metal oxide (1%)
C903	1-102-981-00	Ⓐ 300p		R130,230	1-214-122-00	Ⓐ 390	1/4W metal oxide (1%)
C904	1-102-973-00	Ⓐ 100p		R131,231	1-214-159-00	Ⓐ 13k	1/4W metal oxide (1%)
C905	1-123-187-00	Ⓐ 10	25V elect	R132,232	1-214-112-00	Ⓐ 150	1/4W metal oxide (1%)
C2001,2002	△ 1-115-147-00	Ⓒ 0.033	450V paper	R133,233	1-214-140-00	Ⓐ 47	1/4W metal oxide (1%)
				R134,234	1-214-100-00	Ⓐ 47	1/4W metal oxide (1%)
				R135,235	1-214-116-00	Ⓐ 220	1/4W metal oxide (1%)
				R301,302	1-214-148-00	Ⓐ 4.7k	1/4W metal oxide (1%)
				R303	1-214-142-00	Ⓐ 2.7k	1/4W metal oxide (1%)
				R304	1-214-122-00	Ⓐ 390	1/4W metal oxide (1%)
				R305	1-214-159-00	Ⓐ 13k	1/4W metal oxide (1%)
				R306	1-214-126-00	Ⓐ 560	1/4W metal oxide (1%)
				R307	1-214-112-00	Ⓐ 150	1/4W metal oxide (1%)
				R308	1-214-100-00	Ⓐ 47	1/4W metal oxide (1%)
				R311,312	1-214-140-00	Ⓐ 2.2k	1/4W metal oxide (1%)
				R313	1-214-122-00	Ⓐ 390	1/4W metal oxide (1%)
				R314	1-214-108-00	Ⓐ 100	1/4W metal oxide (1%)
				R315	1-214-116-00	Ⓐ 220	1/4W metal oxide (1%)
				R316,317	1-214-148-00	Ⓐ 4.7k	1/4W metal oxide (1%)
				R318	1-214-142-00	Ⓐ 2.7k	1/4W metal oxide (1%)

Note: The components identified by shading and mark **△** are critical for safety. Replace only with part number specified.

Note: Circled letters (Ⓐ to Ⓛ) are applicable to European models only.

Ref. No.	Part No.	Description			Ref. No.	Part No.	Description		
R319	1-214-122-00	Ⓐ 390	1/4W	metal oxide (1%)	RV401	1-224-491-00	Ⓑ 22 k, adjustable; 33 rpm osc freq.		
R320	1-214-126-00	Ⓐ 560	1/4W	metal oxide (1%)	RV402	1-224-661-00	Ⓑ 47 k, adjustable; 45 rpm osc freq.		
R321	1-214-159-00	Ⓐ 13 k	1/4W	metal oxide (1%)	RV403	1-224-491-00	Ⓑ 22 k, adjustable; 33 rpm speed		
R322	1-214-112-00	Ⓐ 150	1/4W	metal oxide (1%)	RV404	1-224-661-00	Ⓑ 47 k, adjustable; 45 rpm speed		
R323	1-214-100-00	Ⓐ 47	1/4W	metal oxide (1%)	RV405	1-224-489-00	Ⓑ 2.2 k, adjustable; gain		
R326,327	1-214-140-00	Ⓐ 2.2 k	1/4W	metal oxide (1%)	RV406	1-224-660-00	Ⓑ 1 k, adjustable; gain		
R328	1-214-108-00	Ⓐ 100	1/4W	metal oxide (1%)	RV407	1-224-490-00	Ⓑ 4.7 k, adjustable; offset		
R329	1-214-122-00	Ⓐ 390	1/4W	metal oxide (1%)	RV408	1-224-490-00	Ⓑ 4.7 k, adjustable; offset		
R401	1-214-156-00	Ⓐ 10 k	1/4W	metal oxide (1%)	RV601	1-224-490-00	Ⓑ 4.7 k, adjustable; auto return		
R402	1-214-132-00	Ⓐ 1 k	1/4W	metal oxide (1%)	RV751	1-226-150-00	Ⓑ 20 k, variable with switch; PITCH		
R403	1-214-156-00	Ⓐ 10 k	1/4W	metal oxide (1%)					
R408	1-214-162-00	Ⓐ 18 k	1/4W	metal oxide (1%)					
R409	1-214-176-00	Ⓐ 68 k	1/4W	metal oxide (1%)					
R471	1-214-162-00	Ⓐ 18 k	1/4W	metal oxide (1%)					
R472	1-214-176-00	Ⓐ 68 k	1/4W	metal oxide (1%)					
R475	1-214-151-00	Ⓐ 6.2 k	1/4W	metal oxide (1%)					
R476	1-214-144-00	Ⓐ 3.3 k	1/4W	metal oxide (1%)					
R477	1-214-151-00	Ⓐ 6.2 k	1/4W	metal oxide (1%)					
R478	1-214-144-00	Ⓐ 3.3 k	1/4W	metal oxide (1%)					
R622	△1-206-642-00	Ⓐ 120	2W	metal oxide (nonflammable)					
R631	△1-206-640-00	Ⓐ 100	2W	metal oxide (nonflammable)					
R701-703	△1-244-849-00	Ⓐ 100	1/2W	carbon					
R704	1-244-869-00	Ⓐ 680	1/2W	carbon					
R709	△1-206-672-00	Ⓐ 2.2 k	2W	metal oxide (nonflammable)					
R751,752	△1-246-529-00	Ⓐ 220 k	1/4W	carbon					
R903	1-214-180-00	Ⓐ 100 k	1/4W	metal oxide (1%)					
R904	1-214-168-00	Ⓐ 33 k	1/4W	metal oxide (1%)					
R905	1-214-180-00	Ⓐ 100 k	1/4W	metal oxide (1%)					
R906	1-214-168-00	Ⓐ 33 k	1/4W	metal oxide (1%)					
R907-910	1-214-180-00	Ⓐ 100 k	1/4W	metal oxide (1%)					
R1502	△1-214-167-00	Ⓐ 30 k	1/4W	metal oxide (1%)					
R1503	△1-214-128-00	Ⓐ 680	1/4W	metal oxide (1%)					
R1504,1505	△1-214-142-00	Ⓐ 2.7 k	1/4W	metal oxide (1%)					
R1506	△1-212-369-00	Ⓑ 5.6	1W	metal oxide					
R1507									
R1510	△1-212-356-00	Ⓑ 0.47	1W	metal oxide (nonflammable)					
RV101,201	1-224-247-XX	Ⓒ 100	adjustable; dc balance		X401	1-527-304-00	Ⓕ Crystal		
MISCELLANEOUS									
CNJ1	△1-509-547-00	Ⓑ	Connector, 3-p; AC IN						
CNJ2	1-509-991-00	Ⓑ	Socket, 11-p; REMOTE CONTROL						
F1	△1-532-237-00	Ⓑ	Fuse, 3.15 AT						
F2	△1-532-259-00	Ⓑ	Fuse, 1.6 AT						
F3,4	△1-532-273-00	Ⓑ	Fuse, 250 mA						
F5-7	△1-532-469-00	Ⓒ	Fuse, 100 mA						
J901-904	1-507-416-XX	Ⓒ	Pin Jack, 4-p; PHONO, LINE OUT						
M1	A-4608-034-A	⓪	Motor (A) Ass'y						
M2	8-835-001-XX	⓪	Motor (B), DNF-1001A						
MGH	1-543-079-00	①	Head, speed detecting						
NL1	△1-519-138-11	Ⓖ	Lamp, neon						
PC	1-800-343-00	Ⓒ	CdS						
PL1	1-518-234-00	Ⓑ	Lamp, 6 V 100 mA						
PM1	1-454-187-00	Ⓕ	Solenoid, brake						
RY401	1-515-296-00	Ⓕ	Relay						
RY701	1-515-278-00	Ⓕ	Relay						
RY901	1-515-294-11	Ⓕ	Relay, reed						
S5	△1-552-295-12	Ⓕ	Switch, rotary; POWER						
S6	1-516-657-00	Ⓒ	Switch, miniature; return						
S901	1-552-296-00	⓪	Switch, rotary; AMP SELECTOR						
S902,903	1-552-297-00	Ⓖ	Switch, rotary; LOAD						

Note: The components identified by shading and mark
⚠ are critical for safety. Replace only with
part number specified.

Note: Circled letters (Ⓐ to Ⓛ) are applicable to European models only.

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
	1-452-138-00	Ⓐ Magnet
	1-533-051-XX	Ⓐ Holder, cylindrical lamp
	1-536-401-XX	Ⓐ Terminal Strip, 1L1
	1-551-232-00	Ⓜ Cord with Connector, for remote control unit
	1-561-094-00	⓫ Connector
	1-586-737-00	⓪ Remote Control Unit

PACKING MATERIALS AND ACCESSORIES

<u>Part No.</u>	<u>Description</u>
X-2219-805-0	⓪ Brush Ass'y
1-551-315-00	⓪ Cord, connection; RK-112
3-701-616-00	Ⓐ Bag, plastic
3-701-620-00	Ⓐ Bag, plastic
3-770-427-11	Ⓛ Manual, instruction
3-793-395-14	Ⓐ Gauge, tracking error
3-794-154-11	Ⓜ Booklet, technical information
4-808-461-00	Ⓔ Adaptor, 45 rpm
4-844-442-00	Ⓒ Bag, plastic
4-847-092-00	Ⓒ Screwdriver
4-855-176-00	Ⓒ Screw, turntable
4-855-208-00	Ⓒ Escutcheon, spindle
4-855-247-00	Ⓔ Screw, plate
4-855-248-00	ⓘ Weight, sub
4-855-261-00	Ⓟ Rubber Mat, turntable
4-855-284-00	Ⓣ Turntable
4-855-606-00	Ⓒ Frame
4-855-607-00	Ⓑ Sheet, protection
4-855-608-00	Ⓒ Bag, protection
4-855-609-00	Ⓖ Cushion, upper
4-855-610-00	Ⓔ Cushion, inner
4-855-611-00	Ⓕ Cushion, lower
4-855-612-00	Ⓔ Cushion, turntable
4-855-613-00	Ⓑ Case, accessory
4-855-614-00	Ⓑ Case, accessory
4-855-633-00	⓫ Carton
4-855-634-00	Ⓐ Cushion, weight bar
4-855-635-00	Ⓐ Sheet (B), protection

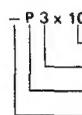
1/4 WATT CARBON RESISTORS [Ⓐ]

Note: Circled letter [Ⓐ] is applicable to European models only.

Ω	Part No.										
1.0	1-246-401-00	10	1-246-425-00	100	1-246-449-00	1.0k	1-246-473-00	10k	1-246-497-00	100k	1-246-521-00
1.1	1-246-402-00	11	1-246-426-00	110	1-246-450-00	1.1k	1-246-474-00	11k	1-246-498-00	110k	1-246-522-00
1.2	1-246-403-00	12	1-246-427-00	120	1-246-451-00	1.2k	1-246-475-00	12k	1-246-499-00	120k	1-246-523-00
1.3	1-246-404-00	13	1-246-428-00	130	1-246-452-00	1.3k	1-246-576-00	13k	1-246-500-00	130k	1-246-524-00
1.5	1-246-405-00	15	1-246-429-00	150	1-246-453-00	1.5k	1-246-577-00	15k	1-246-501-00	150k	1-246-525-00
1.6	1-246-406-00	16	1-246-430-00	160	1-246-454-00	1.6k	1-246-578-00	16k	1-246-502-00	160k	1-246-526-00
1.8	1-246-407-00	18	1-246-431-00	180	1-246-455-00	1.8k	1-246-579-00	18k	1-246-503-00	180k	1-246-527-00
2.0	1-246-408-00	20	1-246-432-00	200	1-246-456-00	2.0k	1-246-580-00	20k	1-246-504-00	200k	1-246-528-00
2.2	1-246-409-00	22	1-246-433-00	220	1-246-457-00	2.2k	1-246-581-00	22k	1-246-505-00	220k	1-246-529-00
2.4	1-246-410-00	24	1-246-434-00	240	1-246-458-00	2.4k	1-246-582-00	24k	1-246-506-00	240k	1-244-754-00
2.7	1-246-411-00	27	1-246-435-00	270	1-246-459-00	2.7k	1-246-583-00	27k	1-246-507-00	270k	1-246-531-00
3.0	1-246-412-00	30	1-246-436-00	300	1-246-460-00	3.0k	1-246-584-00	30k	1-246-508-00	300k	1-246-532-00
3.3	1-246-413-00	33	1-246-437-00	330	1-246-461-00	3.3k	1-246-585-00	33k	1-246-509-00	330k	1-246-533-00
3.6	1-246-414-00	36	1-246-438-00	360	1-246-462-00	3.6k	1-246-586-00	36k	1-246-510-00	360k	1-246-534-00
3.9	1-246-415-00	39	1-246-439-00	390	1-246-463-00	3.9k	1-246-587-00	39k	1-246-511-00	390k	1-246-535-00
4.3	1-246-416-00	43	1-246-440-00	430	1-246-464-00	4.3k	1-246-488-00	43k	1-246-512-00	430k	1-246-536-00
4.7	1-246-417-00	47	1-246-441-00	470	1-246-465-00	4.7k	1-246-489-00	47k	1-246-513-00	470k	1-246-537-00
5.1	1-246-418-00	51	1-246-442-00	510	1-246-466-00	5.1k	1-246-490-00	51k	1-246-514-00	510k	1-246-538-00
5.6	1-246-419-00	56	1-246-443-00	560	1-246-467-00	5.6k	1-246-491-00	56k	1-246-515-00	560k	1-246-539-00
6.2	1-246-420-00	62	1-246-444-00	620	1-246-468-00	6.2k	1-246-492-00	62k	1-246-516-00	620k	1-246-540-00
6.8	1-246-421-00	68	1-246-445-00	680	1-246-469-00	6.8k	1-246-493-00	68k	1-246-517-00	680k	1-246-541-00
7.5	1-246-422-00	75	1-246-446-00	750	1-246-470-00	7.5k	1-246-494-00	75k	1-246-518-00	750k	1-246-542-00
8.2	1-246-423-00	82	1-246-447-00	820	1-246-471-00	8.2k	1-246-495-00	82k	1-246-519-00	820k	1-246-543-00
9.1	1-246-424-00	91	1-246-448-00	910	1-246-472-00	9.1k	1-246-496-00	91k	1-246-520-00	910k	1-246-544-00

HARDWARE NOMENCLATURE

Screw:



L: Length in mm
D: Diameter in mm
Type of head

Indicated slotted-head only.

Unless otherwise indicated, it means cross-recessed head (Phillips type).

Nut, Washer, Retaining ring:

N 3

Diameter of usable screw or shaft
Reference designation

Reference Designation	Shape	Description	Remarks
SCREWS			
P		pan-head screw	binding-head (B) screw for replacement
PWH		pan-head screw with washer face	binding-head (B) screw and flat washer for replacement
PS PSP		pan-head screw with spring washer	binding-head (B) screw and spring washer for replacement
PSW PSPW		pan-head screw with spring and flat washers	binding-head (B) screw and spring and flat washers for replacement
R		round-head screw	binding-head (B) screw for replacement
K		flat-countersunk-head screw	
RK		oval-countersunk-head screw	
B		binding-head screw	
T		truss-head screw	binding-head (B) screw for replacement
F		flat-fillister-head screw	
RF		fillister-head screw	
BV		braizer-head screw	

Reference Designation	Shape	Description	Remarks
SELF-TAPPING SCREWS			
TA		self-tapping screw	ex: TA, P 3 x 10
PTP		pan-head self-tapping screw	binding-head self-tapping (TA, B) screw for replacement
PTPWH		pan-head self-tapping screw with washer face	binding-head self-tapping (TA, B) screw and flat washer for replacement
PTTWH		pan-head thread-rolling screw with washer face	binding-head (B) screw and flat washer for replacement
SET SCREWS			
SC		set screw	
SC		hexagon-socket set screw	ex: SC 2.6 x 4, hexagon socket
NUT			
N		nut	
WASHERS			
W		flat washer	
SW		spring washer	
LW		internal-tooth lock washer	ex: LW3, internal
LW		external-tooth lock washer	ex: LW3, external
RETAINING RINGS			
E		retaining ring	
G		grip-type retaining ring	

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